

FIGURE 1A

Nucleotide sequence of the partial PK-6 from *Physcomitrella patens* (SEQ ID NO:1)

GCACGAGCTCAATCCTCATGTTTCGGACTGTGGACTAGCTGCCCTTGCACCATCTGG
TTCTGAACGCCAGGTGTCGGCACAAATGTTGGGCTCTTTCGGTTACAGTGCCCCTGA
GTACGCCATGTCTGGAACCTATACCGTGAAGAGTGACGTCTACAGCTTCGGTGTTGT
AATGCTGGAGCTACTCACTGGGCGCAAGCCTTTAGACAGCTCAAGACCACGATCCG
AGCAATCTTTGGTACGATGGGCCACACCTCAATTGCACGACATCGACGCCCTTGCAC
GAATGGTGGATCCGTCGTTGAAGGGCATCTACCCTGCTAAATCACTCTCTCGGTTTG
CTGATATAGTCGCCCTTTGCGTCCAGCCGGAGCCCGAGTCCGACCCCGATGTCTG
AAGTGGTGCAGGCACTTGTAAGGCTGATGCAGCGTGCGAGTCTGAGCAAACGCAGA
TCGGAGTCCGCTGTTGGGAATTGAGTCGAACGAGCCATCTGAGACTTCACCTTTGAG
AGTACTGAAGCGCCCACTAGCCTAATCGTGCATCTTTGGCCATCTCGTTTCTGAGTG
GAACACAAAGCTGGGTATATTCTTTGGTGGTTAAGCAACCATTTGTCCCAATTTGAA
CTTCCGCTGGNGAAGGTCTGTATGTTGAGAAACGATGCAAAGCGTTCGCGTGGTNTG
CTTGAACCTCAAA

FIGURE 1B

Nucleotide sequence of the partial PK-7 from *Physcomitrella patens* (SEQ ID NO:2)

GGCACGAGCCGAAC TTCAGCAGCTTCTTCACATCTTCAGGTTGCTTGGCACCCCGAA
TGAGACAATCTGGCCTGGTGT TAGCCAGCACCGTGATTGGCACGAGTTTCCTCAATG
GAGACCACAAGATCTGTCCCTTGCTGTTCCCGGACTCAGCGCGGTTGGCTTAGACCT
TCTCGCCAAAATGTTGGTATTCGAGCCCTCAAAGAGAATCTCTGCCAAAGCCGCCTT
GAGCCATACTTATTTGCTGATGTTGATAAGACAGCAACCTAAACACAACAGAACA
ATTCAAGAGAACCAGGTAACCTCTACCTGTCCAAGACGAAGGACATCTAACTCTTCA
GTCAAACCTTGGCCAATCATGCTGATTGGGAATTGAACCACAGGAACGAGGTGGGCA
CCGTGGTTCGCTGTAGCATACAAAGTAGTCTGGAAGACTTGACATCGTTAGCTGGCA
ATGCAGTATTTTGGAAATACAATTTTTCATTAAAAATCTCCTAAAGATTCAATATTTG

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FIGURE 1C

Nucleotide sequence of the partial PK-8 from *Physcomitrella patens* (SEQ ID NO:3)

GCACCAGACTATGACAAGCGCACGCCCTTGACATCGCCGCGTCCCTGGATTGTGTC
CCTGTTGCTAAAGTCCTGCTTGCGGAAGGAGCAGAGTTGAATGCAAAAGACAGGTG
GGGGAATCTCCGAGAGGCGAGGCGGAGAGTGCAGGATACATGGAGATGGTAAAG
CTGTTGAAGGATTACGGGGCTGAGTCACACGCAGGTGCCCCGAGGGGGCCACGTTGA
GAGTCTGATTACAGGTTGCCCCCTCCGTTGCCTTCTAACCGCGACTGGGAGATCGCTCC
GTCGGAGATTGAACTTGATACCAGCGAGCTCATCGGCAAAGGCTCCTTTGGAGAGA
TTCGGAAGGCGCTTTGGCGCGGCACACCCGTCGCTGTGAAGACAATCAGACCTTCTC
TGTCCAACGACAGAATGGTCATCAAGGACTTCCAGCACGAGGTGCAATTGCTCGTA
AAGGTTCTGGCACCCAAACATTGTGCAGTTCCTCGGGGCTGTTACCCGTCAAAGACCT
CTCATGTTAGTCACCGAGTTTCTGGCAGGGGGGCGATTTGCATCAGTTGCTGAGGAG
CACCTAAATTTGGCTCCTGACCGCATCGTGAAGTATGCCCTCNACATAGCTCGCGG
CATGTCTTACTTCACCATCGGAGCAGCCCA

FIGURE 1D

Nucleotide sequence of the partial PK-9 from *Physcomitrella patens* (SEQ ID NO:4)

TCCAGCCCATTGTTGGCCACACACAGCTGTTTCATGAGTCACCCGCTTCAGGNTGA
ACTGAAGAAACGTAACCTCCGTACGGCTATTTTACCAAATTTTCAAGCTCGTTGTCCC
GCCATGATCCAAATGGAAGCTCAGTTTGCAACATGAAGTACATTGAACACACCTACC
GCCCACCAGTCAGAAGCCAGGCCATGACCTTGTCTTGAATGATCTCGGGTGCTAAG
AAATCAGCCATGCCACAGACTGTGAAAGTGCGCTCATCCGACATTTGCTTTGCAAAC
CGAAAATCAACCAGCTGAAGTCGTCCTTTCCGATCTATCATAAGAACATCGGGAGA
GATGCCACGATATACAACGCCATCCTTGTGCAGAAGTTCGACGGCTAATACCACGTT
GGCGACCAGAAAACGAGCTGAGTTCTCGTCTAAAGGTGACCGAAGTAGAAGTTCTA
GAGGCCCAGCTAACACACAATTAAGAACGAGTGCCACATTGTCACTGTCAATAGGG
GTGGCCAAGAGATGCGGCACGAATGGGGAAGGCCTCAGTTGCTTGAAAAGAGTTCT
CTCCAATAGGACTTGGCCCTCCCGACCGAGTCTCTGAACTTTACGTCTCTGGTACCTT
TTCATGCTTATGACGTCATCTGATTTCTTGACAGAGCACCACACCGACATCACAGCAA
TCGGTTGAATAGACCTGGTGCCGATTCT

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FIGURE 1E

Nucleotide sequence of the partial CK-1 from *Physcomitrella patens* (SEQ ID NO:5)

TATGCCCATCTTCTCATACTCAGACCAGATCCTCTATTTCAATTACAGAAGAAAGTT
GCTTGTGCAACGTATTGAAATCATCACCGTCATGGGCTTTCCGAGTAAAAATTCTTG
TAATGGATAAAGTCATTTCTAGTCTGATCCATAACAAGCTACCGACACAATGCTAGAA
GCCTTGATTTACACACTACACACTAGAGAGTCTACAACCTCTTTTCCTACACTCTGCTT
AGTTGCCTCATCCTCAACTCCATAAACCCCATTCACAATCATGTAAGACTTGAGAG
AGGGAAACAGTAAGCAACCTTGTGCTATTTTAGTACCAGAGCAGAGGATGAACCAC
TAGTCCTCCCAACGTAAGCCCTAATTCGCCGCAACAACCTCACGACGGAACCTCCGAC
TTGGTCAAGGGTGGACAATATGATACATTCGAAGGTCGATTTTGCAAATGGGACGA
AGCAGCGGAATTCTGGCTGCGCACTGATTGCAGAGAGCCATTCTGGGGGAGTTGAG
TATACACAGTCCAGTCGTACACATGGTCGAGCTGGAATTTTTTCTGAATGAAAAGAT
CACGGAACAAGCTTCGGAGGTACAGTAGTCAGGCTGCTCGTAAAAACCTANACTTC
GCGGCGTGGTGCAAAAAGTCGGCAAATTGACTGGGATACCCATCACAAAGCTCCTC
CCACAGTGGGGGTCATCTTGATTTTGTGTCATGTACTCGTGTTGCTTCTGGTCAGT
GAGGGCGTTGCCCCGCCCTTCCCTTGCCATGGCAAATTGCCTCTTAGAAAGTACATAA
GAATGTAACCCAAGTGATTCTATGTCATCTCTTCTACTGTGCTCGATTCTCTGTGCT
GATTCCTACTAGCGTACCGTGCCGTCCCTGTGAAGCTCTTCCTATCTCGGTAAGGGA
TATGCCTTCGTGTTGCCGGGTCCATGTACTCCTTTGCCAAGCCAAAATCTATAATGA
ACACTTGGTTTCCTTGCCGACCGCAGCCCATGAGGAAGTTATCCGGCTTCAGGTCAC
GGTGAACGAGCCCTCGAGAATGCACGTATTCCACCCGGTCAATCATTTGGTAACCGA
GCATAATCACGGTCTTCAACGAAAACCTTAGCCCACACACCTTAAAGAGGTGCAAC
AGGTTTCGGCCCCAATAGGTCTAGCACCATCACATTGTAGTCTTCTGCTGCTTTTCCGA

FIGURE 1E Continued

ACCATCTCATGTTGGGCACTCCCTTCCCACCCGCAATATGTTGTACAAGCGCGACT
CGTGCATTAACTCTCGTGC

[illegible]

FIGURE 1F

Nucleotide sequence of the partial CK-2 from *Physcomitrella patens* (SEQ ID NO:6)

TTTTTTTTTCCAATAGATTTCATTACATAACTCCAAGTTATGATATGTACAGGTTA
GCAACAAGCTAATGGCTGCAAGCAGTGAACATACTACCAAGGGAGAGATTCTCACT
CCCTAGACTTCATCCTCGTACGTTACTTGGCAAGGATTATGGTTTAGTGATAAAAAG
CTTCACAAGCCGGCAAGCATGCTGGTTGCTTCTGCTGCAATCTAATGATTATTCCTT
AGGAATCGTATGGCAGAGAGCTACCAACACAAAGCACTGACAATGGTTTGATGGTAA
CAAGATAGAGATCCATTCATTCTAAGTATGAGAGACCTGTAGTCTTAGCACCATTG
TAGGACAGAACCACCGTTTTCCCCTCAATCAGGCTGTTGCCAAATGTAGAGCAACTC
TCATCAACATAACAAGAGGGTTTGATAGAAGACAGAGCCCGGCTATATAACCACAA
GCCCTGCGCCTACCTTATAACGGCTTGGATCCACCTCAACAGAAAGTGATTCAACTC
CCTTGATAACCGGCTTTCGTAAATCCTCAAGTTGGCAGATGGCGGTTGTGGATGGCGG
CTAGATATCCGCTTTGGGTCCGAAGTAACTGGAGAGCTCCTCTGCATCCCTGCTGAC
GACCGTAAGCTGGTGGGACCAAGCTTACTGCTCCCTGTTGAGAGGAATCTACGACT
TCTGCTGATGCCCCTGAGGGCCTGCTGCTAGATAGGACAGCTCGCCTGGAGGAAGA
ACCCCCCGAGTTGCATACGAAGATGTATGCATGCGCTCTGGTTCTGACACAACAGC
AAGAGCAGAATCCTTAGCAGATTCATCAAGTCCAGGACTTTTGTGCTTAGATGAGTC
CAAAGCATTTGCGACCCCGGAGCCATTTGCTCCTCCAGGAAGCCTGCGCCGAGAAG
GATCCATTGGTTCGGTGGGCCGCTGCAGGTCTCGGCTTCCTGTAGCCCCAGTTCCAA
GTGCACCACTGGTTTGCCCTGCAGAAGCACCCAGTCGAGTTGAACTGCCACCGGAA
ATTTGTGACTGCTGGTACTTCAGAATTGTCCAGTCAAAAACGTAGTCAAATTGAAAA
CCTGTAAACTATTTCCAGTTTAGGCAAACAGAAGTGGCACTGTAATAAACTGAAA
ATCATCAAACATTCACAACTATCTGTTCGTTGATAGAGCATAGTAAAGTCTGCGCT

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FIGURE 1F Continued

TAGGATCAAGTCTTGATACATTACAATGCCCAAGCAAGAGTGAAACCTACAAAAGT
TACAGTTTTTCATACCCTCACGAATAAAGAGGTCACGGAAGATTCTTTTCAAATATGC
ATAGTCGGGTTTGTTCATCAAAACGCAAGGACCGGCAGTAGTGGAAGTACGCTCGTG
CGAATTCTGAAGGATAATTTTTACAAAGGACCTCAATGGGCGTGGACATTTGTTTTC
TCACTGATCTTCTCGTACTTCTGCTTCTTGGTTCCCGCTTTCAGTCCTTGCCCATGGAA
GACTGCCTCTCAGGAAGTACATGAGCACATATCCAAGAGATTCCAAATCATCTCGTC
TGCTTTGCTCAATACCAAGATGAGTGTTGATGCTTGCATACCGAGCAGTCCCTGTCA
GATTTTTGTTCTCCCTGTAGGGAATATGCTGATGCGTGGAAGGGTCGCGGTACTTCTT
GGCAAGACCAAAAATCAATAATGTAGACCTGGTTTGCTCGCCTACCAAGCCCCATTAG
AAAATTATCAGGCTTGATGTCTCTATGAAGAAAGCTTTTCGCATGCACATACTCCAC
TCTGTTGATCAGCTGGTCAGCAAGCATGAGAACAGTCTTTAAAGAGAACTTCCGGCT
GCAGAAGTTGAAAAGGTCTTCGAGACTTGGCCCCAACAGATCCAGAACCAAGACAT
TGTAGTCTCCTTCTATCCCGAACCATCCTCGTGC

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FIGURE 1G

Nucleotide sequence of the partial CK-3 from *Physcomitrella patens* (SEQ ID NO:7)

CGGTGGGGCGCTCCCCAATATTTTATCCCCGGGGCTGCAGGGAATCCGGCGACCAGT
NTTTGAAGGTGTCAACGCCGTGAATAGTGAGCGTTGCGTTATGAAGATTTTGAAGCC
AGTAAAGAAAAAAAAGATCAAAAGAGAGATCAAGATTCTGAAAACCTTTGTGGAG
GGCCCAACATTGTGAAGCTTCTGGACATTGTCCGTGATCAGCAATCGAAGACACCCA
GCCTAATTTTTGAGTATGTGAACAATACTGATTTCAAAGTGCTCTACCCCACTCTTAC
AGACTTTGATATCCGATACTACATTCATGAGCTGCTCAAGGCTTTGGACTATTGCCA
TTCTCAAGGGATTATGCACAGGGATGTGAAGCCACACAACGTGATGATTGACCATG
AGCAGCGGAAGCTTAGGCTTATTGACTGGGGACTTGCCGAATTCTATCATCCTGGCA
AAGAGTATAATGTGCGTGTTGCCTCTAGGTACTTCAAGGGTCCTGAGCTGCTGGTTG
ATCTTCAAGATTATGATTACTCTCTCGACATGTGGAGCTCTGGGGTGCATGTTTGCCG
GCATGATATTTTCGGAAGGAGCCATTCTTTTATGGGCATGACANTTCATGATCAACTT
GGTGAAGATCGCTAAGGTGTTGGGAACTTGATGAATTGAATTCCTATCTAACAAATA
CCGCTAAGTGGACCCCATTTGGAGCACCTGGTGGGGG

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FIGURE 1H

Nucleotide sequence of the partial MPK-2 from *Physcomitrella patens* (SEQ ID NO:8)

GCACGAGGAACTAACGAATTGTCATTCTATAATCCAATAGTGTAATCACACGGGGG
GGAATAAGTTGCAAAACCATAACAACGCCGGGATAGCGTTGTAGCCACCTAAAGAAT
TGAGAGTAGGCCTTACAACCTGAGATGAAGTGTGAAGTGGTACTGCACCATATCATC
AGGACCTAAGCTGCAATCCAGAGCCTCCCTCCAAATGAGATCCCTGATAGGCTCCTC
CGAGATAGAGGGCTCCTCGAAGCCAACTCGAAGGGAGATACCGAGCCAGGCTCAT
CGTTGATGTCATGAAGTGAAGCTTAAATAAGGGTGCGCCAAGGCAGCTTCCACTGTG
ATTCTTTTCGCTGGATCAAAGACCAGCATCTTTTCAACAAGATCAAGAGCAGAACGA
TTAATGCCTCTGAACTTCTGGGTAAAGGAATAGGCGACTGTCGAGGCAGGTGCTTG
ATATACCGCCTAGCATTGTCGCTTCTCAAAAACCCAAGATCCCTATCTTCAGGAGTT
CCGATGAGTTCTGTAATTAGGCGGAGCTGATGCACATAGTCTCTCCCAGGGAACAAC
GCAGATCGGTAAAGCAACTCCATGAAGATGCACCCCACAGACCAAATGTCAATAGC
TGCAGTGTATGCTGAACAATTCAGGAGCAGCTCTGGAGCTCTGTACCACCTCGTTAC
AACATACTCAGTCATGAAATCCGTTTCAGAGAGAGTGCGTGCCAAGCCAAAATCTG
CGATTTTCAAATCGCAATTGGCATTGACGAGAAGGTTGGTGGGCTTCAAGTCCCGGT
GCAAGACGTTCCGCCGAATGGATGTACTTCAAGCCCCGCAAGATTTGATACAGAAAA
TACTGACAGTGGTCTTCTGTGAGAGCTTGATTTGAACGAATGATCTGGTGTAGGTCC
GTATCCATCAACTCGTATACAATGTACACGTCGTTGAAATCTCGTGC

FIGURE 11

Nucleotide sequence of the partial MPK-3 from *Physcomitrella patens* (SEQ ID NO:9)

CGGCACCAGCCTCGCTGGAGACCGACCATCGAAGCACCTTAAGCTCGTTTTTCATTCG
GCATTGCTTGCGAGCACTTCGACTTCCTAGAATTTCAATAGACCTAATGGAATCGCC
ACTCCCTAATCTTTCCGGAGAGGCCTTATCGCCGACGGCAACTGCCGAAGACGAGAT
TACTCAGATGATACTAAAAAGTGCCGCAAGGTCCGAATTAGGAATGTATGTTTCGAA
GAGACAGGAATTCTATCTTCGAAGAGCGCGGAGGCGGCGTAAGTTTGCGTGGAAGC
CGGTTTTGCAGAGCATCTCCGAGATGAAGCCTGTCATGGAATTCCACACTCCGATGG
CTTACCGGGATAGTGGGTCTCCGCCGAAGAACGCCTCTACCCCATCCTTACCTGGCC
CGAAGAACATTTACCGCCACGACAAGTGAGTGTCCCGCAAAGGAGCAGTCCTCCG
CCGAAGAACGTCTCACCACCTCCCCAGCCCGGCATTTTGTAGCGCGGACTGCGATCG
AAGTATTCTGCTGCATCTCAGCAAGTTCAACGAAATCGAGGGCAACGCGAAATCTCT
TTTATATGGCGTAGTTTGTGTCTCCGACTGGACTCCTATCTATCCCCATCGAGATAAC
TGATTCGGTGGATAATTTCTCAAATTTTGGCTAACNCAAGAANCTCAAGGGCGAAT

CGGCACCAGCCTCGCTGGAGACCGACCATCGAAGCACCTTAAGCTCGTTTTTCATTCG
GCATTGCTTGCGAGCACTTCGACTTCCTAGAATTTCAATAGACCTAATGGAATCGCC
ACTCCCTAATCTTTCCGGAGAGGCCTTATCGCCGACGGCAACTGCCGAAGACGAGAT
TACTCAGATGATACTAAAAAGTGCCGCAAGGTCCGAATTAGGAATGTATGTTTCGAA
GAGACAGGAATTCTATCTTCGAAGAGCGCGGAGGCGGCGTAAGTTTGCGTGGAAGC
CGGTTTTGCAGAGCATCTCCGAGATGAAGCCTGTCATGGAATTCCACACTCCGATGG
CTTACCGGGATAGTGGGTCTCCGCCGAAGAACGCCTCTACCCCATCCTTACCTGGCC
CGAAGAACATTTACCGCCACGACAAGTGAGTGTCCCGCAAAGGAGCAGTCCTCCG
CCGAAGAACGTCTCACCACCTCCCCAGCCCGGCATTTTGTAGCGCGGACTGCGATCG
AAGTATTCTGCTGCATCTCAGCAAGTTCAACGAAATCGAGGGCAACGCGAAATCTCT
TTTATATGGCGTAGTTTGTGTCTCCGACTGGACTCCTATCTATCCCCATCGAGATAAC
TGATTCGGTGGATAATTTCTCAAATTTTGGCTAACNCAAGAANCTCAAGGGCGAAT



FIGURE 1J

Nucleotide sequence of the partial MPK-4 from *Physcomitrella patens* (SEQ ID NO:10)

GCACGAGGTTGGTGTAAGTTATTGATAGTGCTGTGCAATTCACAGTTTTGCTACTCC
GGTAGGTCCGACCTCTTCAATTGTCAGTTTAAAACTCTAAAAACATTTGAGAAAAG
TGTTGAAAAATCTCCGTGAGGAAATTCCTTGTCGCAAGACGTGAAAAAAGAAGAA
AGAAGATGGAAATATTGTTTTGGGTATCGAAGAAGTGTTTCGATGCTGTGCAATAAG
GAAAGAAAAAGTGCAGGTAACATAAAAAGCTAGCATGGTGATGATAATATAAGACC
CCGATTAACACACTTATGGATTGTTTCATGAGCTGCACGTTCTCAGCGACAAATGGG
GCTCATTGAGAAAACTCCACTTTCTATAAGGTTGGGAAACGAGCGTTTTTTTTTTGA
AGATGTTTTTTCCGTCAATCTGATTTGATATCGTTCTCAACTTGACCACATATGACTA
TATAAGGAAAAGGCATTGAGAAAGTGGCGGATTGGCGAGGTAGTTCGACCATGCTT
TTGGTAAAGTCCCTTGAAGTTCAGTGGTGGATCAGGCTTGTGGTAGTGACAGTCTCT
GCACGCCATGCGAGGCTAACTTTAAGTTACAAAATCTTGCTCAAATGGTACTCTTCC
TCGTTGTACTTTTGCAGGAACGGATGTTTAAGTAAATCAGTAGTTGATGGTCGTTCA
CTGGGACATTTCCGGATGCAGGATTCAATAAAAGAACAAAATTCGGGGGAGAATTT
GTCAGGGGATGCGGCTGCGGGGGGTTGATTAACATACATTCCATGAGGATGAAGA
AATTTTGCCAACCCTCTTCCATTCCAGCTGGTTTGTATGGGAAGGTACCCAACGCAC
ACTCCAAAAGAGTCAATCCTAAACTCCATAGGTCAGTGTCTGATGCATACGAACGCC
CCTGAAGGCGTTCTGNCGACATATATGTGCAAGTCCCAACGAACGTGTCTCGCTGGG
CCAAGGAATGAACCAACACAGCACTGACACCAAATCAGATATTTTGACCTCACCC
TTGTGATTGATGAGGAGGTTGGAGGGCTTTATATCACGATGTATGATGTGCCTGACT
TGGTGTAGGTATTCCAATCCCTTCAGAACTTGACTAGCAATGACGGCCAAATACGGC
TCAGGTATNTGCTTTCTGGTGC

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FIGURE 1K

Nucleotide sequence of the partial MPK-5 from *Physcomitrella patens* (SEQ ID NO:11)

TCCCCGGGCTGAGGAATTCGGCACGAGCGGTTGATCCTCACCTTGGGAAGGACCCT
GGAATTGAGTAGCGTGCGGAAGCTGCATCGATCCGGAAGAGACGATGAGTAGGAGA
GTGAGAAGGGGAGGTCTTCGCGTCGCGGTGCCGAAGCAAGAGACTCCCGTCAGCAA
ATTTTGTACTGCCAGTGGAACCTTCCAGGATGATGATATCAAGCTCAACCACACCGG
GCTTCGCGTCGTCTCTTCAGAACCTAACCTTCCTACGCAGACGCAGTCTAGCTCCCC
AGATGGGCAACTGTCAATAGCAGACCTGGAGTTAGTGCGGTTCTTAGGAAAGGGTG
CGGGTGGAACCGGTGCAGCTTGGTCCGGGCACAAATGGACCAATGTCAATTATGCAC
TGAAGGCGATACAAATGAATATCAACGAAACAGTGAGGAAGCAGATTGTTTCAGGAG
CTGAAAATCAACCAAGTGACGCACCAGCAGTGCCCTTATATCGTGGAATGCTTCCAC
TCCTTCTACCACAACGGCGTCATATCCATGATCCTAGAGTACATGGACAGGGGCTCG
TTGTCCGACATTATTAAGCAACAAAAGCAGATACCTGAGCCGTATTTGGCCGTCATT
GCTAGTC

FIGURE 1L

Nucleotide sequence of the partial CPK-1 from *Physcomitrella patens* (SEQ ID NO:12)

GCACCAGCCGAGTCGGGCATTTTTTCGTGCGGTGTTGAGGGCTGACCCGAGCTTTGAA
GAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTTCGTGAAGCGTCTCCTG
AATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCATGGATT
CGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTGAGGAAT
TATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAGACTTTA
ACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCAAGTAAC
AACGGTCGTGTTACTTTTGAGAATTTTCAGACAGGCACTGCTGAAAAATTCAACAGAG
GCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTTCATTTC
GCACCAGCCGAGTCGGGCATTTTTTCGTGCGGTGTTGAGGGCTGACCCGAGCTTTGAA
GAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTTCGTGAAGCGTCTCCTG
AATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCATGGATT
CGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTGAGGAAT
TATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAGACTTTA
ACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCAAGTAAC
AACGGTCGTGTTACTTTTGAGAATTTTCAGACAGGCACTGCTGAAAAATTCAACAGAG
GCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTTCATTTC
AAGAAAATGGACTTTTCAGAGTTCTGTGCAGCGGCCATTAGTGTTCTCCAGTTAGAA
G

FIGURE 1M

Nucleotide sequence of the partial CPK-2 from *Physcomitrella patens* (SEQ ID NO:13)

GCACGAGCTCCTGCATCTCCCCCTCCTTCTCCTCCTCATCATTCTGGAGCCCAGCGAA
CTGCGATCTGAGATTCCAACCTTGAAGGGCCTCGCGTAAGCACCGGAGCTCGTTTCT
TACGCTTTTGCGCCTCGCGATATTTGTACATTGTTTCCTCTGGTTTTATTGATTCCGC
CTCTGAAAATGTGAACGGGCTGCAAGCTTGGTTTTGGAGCAACGTTGGAGCATTGAA
GGGTTGCGCTCGTCCCTGCCCATTCCTCGCTTCTGCTCTGGCCTATGTCATGACGACG
TGAAGGAGAGGATTTGAGGGTTTTGCAAGTGATATAATCCTCCCCGAGGAGATTTCT
GTGAGTTGATTAACCTTGGATCAGCGACATGGGGAACACTAGTTCGAGGGGGATCGAG
GAAGTCCACTCGGCAGGTGAATCAGGGAGTCGGGTCTCAAGACACCCGAGAGAAGA
ATGATAGCGTCAATCCAAAGACGAGACAGGGTGGTAGCGTTGGCGCAAACAACAT
GGCGGAAAGCACAAGCAGTGGTGCTCAGGCCGGAGAACGATCCACCTCTGCGCCCG
CTGCTCTGCCGAGGCCGAAGCCAGCATCGAGGTCAGTATCCGGTGTTTTGGGTAAGC
CGCTGTCAGATATTCGTCAATCTTACATCCTGGGACGGGAGCTTGGCCGAGGGCAGT
TCGGAGTGACTTACTTGTGTACTGACAAGATGACGAATGAGGCGTACGCGTGCAAG
AGCATCGCCAAACGGAAACTGACCAGTAAGGAGGATATCGAGGATGTTAAGCGGGA
GGTTCAGATTATGCATCACCTGTCGGGGACACCCAATATCGTGGTGTTAAAGGATGT
GTTTCGAGGACAAGCATTCCGTGCATCTTGTGATGGAGCTCTGTGCAGGTGGCGAGCT
CTTCGATCGCATCATTGCCAAGGGGCATTACAGTGAGCGCGCCGCTGCCGATATGTG
CAGAGTCATCGTCAATGTGGTGCACAGATGCCACTCATTAGGGGTCTTCCATCGGGA
TCTCAAGCCAGAGAATTTTCTGTTGGCCAGCAAGGCTGAGGATGCGCCTCTGAAGGC
CACAGACTTCGGTCTGTCAACTTTCTTTAAGCCAGGAGATGTGTTCCAGGATATTGTT
GGAAGTGCGTATTACGTGGCCCCTGAAGTTTTGAAGAGAAGTTATGGTCCTGAGCTG

FIGURE 1M Continued

ATGTTTGGAGTGCAGGCGTGATTGTGTACATTCTGCTGTGTGGTGTACCCCCCTTCTG
GGCTGAAACTGAGCAGGGTATCTTTGACGCTGTGCTCAAAGGGCACATAGACTTCG
AGAACGAGTCCATGGCCGAAAATCTCCAACGGGGCTAAGGATTTGGTGAGGAAAAT
GCTAAACCCTAACGTGAANAT

[illegible]

FIGURE 2A

Nucleotide sequence of the full-length PK-6 from *Physcomitrella patens* (SEQ ID NO:14)

ATCCCGGGTGAGTATCACTTACGGTGGCGAGGGATGGCCTTTGGGGTAGGAGCTGG
TATATGCGGAGTCCAACAGAAGCTTGTGCAGGACTCTTGAGTTGTGCGTGCGAGGGC
TGAGTGCCGGAAAGGTATTTTCCGACGAAGAGTCAATGTGGGCGTGGACAAACGTT
TGAAGAGATGGGTGTGGATATGAAGGCTCCGGCTAAGCAGTCGCTGGGAGTCGGAC
TGCTCCTGTGCTCTGTAGTGATCCTCTCGGTGGTGAGCTCTGTGTATGGCCAAGTTCA
GACAGATCCAGTGGATACTACAGGCTTAATTTCCATGTGGTATGACTTAAAACAGAG
TCAATCTCTCACGGGGTGGACTCAAAATGCTTCTAACCCTTGTGGGCAGCAGTGGTA
CGGCGTTGTATGTGATGGCTCTTCTGTCACGGAAATCAAATTGGAAGTCGGGGTTT
GAATGGAAATTTTAATCCTTCGTA CTTTCAAACGCTTTTAAAAAGCTTCGAATTTT
GATGCTAGTAACAACAACATCGAAGGAAATATTCCTCAACAGTTTCCTACGTCTCTT
ACTCAAATGATATTGAACAACAATAAATTGACCGGAGGTCTCCACAGTTTGATCAA
TTGGGCGCCTTGACAGTCGTAAACTTGAGCAACAACAATCTGACCGGCAACATGAA
CCCCAACTATTTCAATGTGATCGTGAATGTGGAAACCTTCGATGTTTCCTATAACCA
ACTTGAAGGCACTCTTCCCGACTCCATTCTAAACCTGGCCAAGCTTCGTTTCTTGAAT
TTGCAGAACAATAAATTTAATGGTAAACTTCCCGACGATTTCTCTCGGCTGAAGAAT
TTGCAGACTTTCAACATTGAGAACGATCAGTTCACGGGTAATTATCCATCAGGTTTA
CCCAGTAATAGCAGGGTTGGAGGAAATCGTCTTACATTTCCCCCACCTCCAGCCCC
GGCACACCTGCTCCCAGGACTCCTTCTCCTTCAGGAACATCGAATGGATCATCGTCG
CATCTCCCTCTAGGGGCGATCATTGGAATAGCCGCTGGTGGTGCTGTGCTGCTTTTAT
TACTAGCACTCGGCATCTGTTTGTGTTGTCGTAAGCGGTCCAAGAAAGCATTGGGCG
ATCCAGAGGCCACGACCAGCAGCCGAAGACCGTGGTTCACACCTCCCCTCTCCGCA

FIGURE 2A Continued

AAGAGCCAGAGTGATCCCAGCAAGAGCATAGACAAAACGACGAAACGCAACATCT
TTGGCAGCAGTAAGAGTGAGAAGAAAAGTTCAAAGCACAGAGTATTTGAGCCAGCT
CCTCTTGACAAAGGAGCAGCCGACGAACCAGTGGTGAAGGCGTCTCCGCCCCGTCAA
GGTACTGAAGGCTCCTCCTTCATTTAAGGGTATCAGCGGCCTGGGTGCTGGACATTC
GAAAGCAACAATTGGCAAGGTGAACAAGAGCAATATTGCAGCCACCCCATTCTCTG
TAGCGGATCTTCAGGCAGCCACAAACAGCTTCTCCCAGGATAATCTGATTGGAGAA
GGGAGCATGGGTTCGCGTGTATCGTGCCGAGTTTCCCAACGGCCAGGTCTTGGCCGTG
AAGAAGATCGACAGCAGCGCGTCGATGGTGCAGAATGAGGATGACTTCTTGAGTGT
AGTAGACAGTTTGGCTCGCCTGCAGCATGCTAATACGGCTGAGCTTGTGGGTACTG
TATTGAACATGACCAACGGCTGTTGGTGTACGAGTACGTGAGTCGTGGAACCCTGAA
CGAATTGCTCCATTTCTCGGGTGAAAACACCAAGGCCCTGTCCTGGAATGTCCGCAT
TAAGATTGCTTTGGGATCCGCGCGTGCTCTGGAGTACTTGACGAAGTCTGTGCACC
TCCCGTGGTTCACCACAACCTTCAAATCTGCCAATATTCTGCTAGACGATGAGCTCAA
TCCTCATGTTTCGGACTGTGGACTAGCTGCCCTTGCAACCATCTGGTTCTGAACGCCAG
GTGTCGGCACAAATGTTGGGCTCTTTCGGTTACAGTGCCCCTGAGTACGCCATGTCT
GGAACCTATACCGTGAAGAGTGACGTCTACAGCTTCGGTGTGTGTAATGCTGGAGCTA
CTCACTGGGCGCAAGTCTTTAGACAGCTCAAGACCACGATCCGAGCAATCTTTGGTA
CGATGGGCCACACCTCAATTGCACGACATCGACGCCCTTGACGAATGGTGGATCC
GTCGTTGAAGGGCATCTACCCTGCTAAATCACTCTCTCGGTTTGCTGATATAGTCGCC
CTTTGCGTCCAGCCGGAGCCCGAGTTCCGACCCCCGATGTCTGAAGTGGTGCAGGCA
CTTGTAAGGCTGATGCAGCGTGCGAGTCTGAGCAAACGCAGATCGGAGTCCGCTGTT

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
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GGAATTGAGTCGAACGAGCCATCTGAGACTTCACTTTGAGAGTACTGAAGCGCCCA
CTAGCCTAATCGTGCATCTTTGGCCATCTCGTTTCTGAGTGGAACACAAGCTGGGTA
TATTCTTTGGTGGTTAAGCAACATTTTGT CACAATTTGAACTTCAGCTGGAGAAGGG
TCTGTAGTGTTGAAGAAAACGAATGCAAAGCGTTTCGGCGTGGATGTGCTTTGAGAA
CTTACAAAACCTCATCAAGACTTTGAAGATCTTTGTATTGCATCGAATCCTTTCAATCA
GTCTCGGGTAGGATCAGTTCCTCTGTATCGGATACCCTTTTCATCCTAACATGGGACC
CTTTTAATCCAGAGGATGGAGTGCTTGGAATAGTGACCTTGGTTCGAGTTAACGC

FIGURE 2B

Nucleotide sequence of the full-length PK-7 from *Physcomitrella patens* (SEQ ID NO:15)

ATCCCGGGAGTGGGTGGTTGGACTGTAAGGAGCTAGCGTTTTAGAGCTACAGTGCG
GTTTGCTGTGTGAGTGAGTGAGTGAGTGAGTGCGTGAGTGAGGATGTCTGTTTCTGG
TATGGACAACTATGAGAAGCTGGAGAAGGTAGGAGAGGGGACTTACGGAAAGGTG
TATAAGGCCCGTGATAAACGCTCCGGGCAGCTGGTGGCGCTCAAGAAGACTAGGTT
GGAGATGGAGGAAGAAGGCGTCCCTTCCACCGCTTTGCGCGAAGTTTCGTTGCTACA
AATGCTCTCCACAGCATGTATATCGTCAGGCTACTTTGCGTGGAGCACGTCGAGAA
AGGCAGCAAGCCCATGCTCTACTTGGTCTTTGAATATATGGACACTGATCTTAAGAA
GTATATTGACTTGCACGGTCGTGGTCCGAGCGGGAAGCCTCTGCCTCCCAAAGTGGT
CCAGAGTTTCATGTATCAATTGTGCACAGGGCTTGCCCACTGTCATGGCCACGGAGT
AATGCACAGGGATCTGAAACCCCAAGAATTTGCTCGTCGACAAGCAAACCCGTCGTC
TTAAGATTGCCGACCTTGGTCTCGGTCTGGGCATTACAGTGCCAATGAAGAGTTACA
CACACGAGATTGTTACTCTATGGTACCGAGCTCCTGAAGTTCTTCTTGGAGCGACCC
ACTACTCTCTACCTGTGGATATCTGGTCTGTTGGGTGCATCTTCGCTGAACTCGTCCG
GAAAATGCCGCTCTTCACTGGAGACTCCGAACCTCAGCAGCTTCTTCACATCTTCAG
GTTGCTTGGCACCCCGAATGAGACAATCTGGCCTGGTGTAGCCAGCACCGTGATTG
GCACGAGTTTCTCAATGGAGACCACAAGATCTGTCCCTTGCTGTTCCCGGACTCAG
CGCGGTTGGCTTAGACCTTCTCGCCAAAATGTTGGTATTCGAGCCCTCAAAGAGAAT
CTCTGCCAAAGCCGCCTTGAGCCATACTTATTTGCTGATGTTGATAAGACAGCAAC
CTAAACACAACAGAACAATTCAAGAGAACCAGGTAACCTCTACCTGTCCAAGACGA
AGGTTAACGC

FIGURE 2C

Nucleotide sequence of the full-length PK-8 from *Physcomitrella patens* (SEQ ID NO:16)

ATCCCGGGCAACGAGAAGCATTCGAGATGGCAGATGCGAAGGAGGAACTGGCGCTG
CGCACGGAAATGCACTGGGCTGTGAGGAGTAACGACGTGGGGCTGTTAAGGACCAT
TCTGAAGAAAGACAAGCAGCTCGTGAATGCTGCGGACTATGACAAGCGCACGCCCT
TGCACATCGCCGCGTCCCTGGATTGTGTCCCTGTTGCTAAAGTCCTGCTTGCGGAAG
GAGCAGAGTTGAATGCAAAAGACAGGTGGGGGAAATCTCCGAGAGGCGAGGCGGA
GAGTGCAGGATACATGGAGATGGTAAAGCTGTTGAAGGATTACGGGGCTGAGTCAC
ACGCAGGTGCCCCGAGGGGCCACGTTGAGAGTCTGATTCAGGTTGCCCTCCGTTGC
CTTCTAACCGCGACTGGGAGATCGCTCCGTCGGAGATTGAACTTGATAACGCGAGC
TCATCGGCAAAGGCGCCTTTGGAGAGATTCGGAAGGCGCTTTGGCGCGGCACACCC
GTCGCTGTGAAGACAATCAGACCTTCTCTGTCCAACGACAGAATGGTCATCAAGGAC
TTCCAGCACGAGGTGCAATTGCTCGTAAAGGTTCCGGCACCCAAACATTGTGCAGTTC
CTCGGGGCTGTTACCCGTCAAAGACCTCTCATGTTAGTCACCGAGTTTCTGGCAGGG
GGCGATTTGCATCAGTTGCTGAGGAGCAACCCTAATTTGGCTCCTGACCGCATCGTG
AAGTATGCCCTCGACATAGCTCGCGGCATGTCTTACCTTCACAATCGGAGCAAGCCC
ATCATCCACCGCGATCTCAAACCCCGAAACATCATAGTGGACGAAGAGCATGAGCT
GAAGGTCGGCGACTTCGGACTGAGCAAGCTGATCGACGTAAAGCTTATGCATGATG
TGTACAAGATGACGGGGGGGACTGGGAGTTACAGATACATGGCGCCTGAGGTCTTC
GAACATCAACCCTACGACAAATCCGTCGACGTGTTTTCTTTGGAATGATATTATAT
GAGATGTTTGAAGGCGTCGCTCCGTTTGAGGACAAGGATGCATACGACGCTGCCAC
ACTAGTTGCTAGAGACGATAAGCGGCCAGAGATGAGAGCCCAAACGTATCCCCAC
AAATGAAGGCATTGATCGAGGATTGCTGGTCACCGTATACCCCGAAGCGACCACCTT

[illegible][illegible]

FIGURE 2D

Nucleotide sequence of the full-length PK-9 from *Physcomitrella patens* (SEQ ID NO:17)

aTCCCGGGCTGTGATGTCGGTGTGGTGCTCTGCAAGAAATCAGATGACGTCATAAGC
ATGAAAAGGTACCAGAGACGTAAAGTTCAGAGACTCGGTCGGGAGGGCCAAGTCCT
ATTGGAGAGAACTCTTTTCAAGCAACTGAGGCCTTCCCCATTCTGTGCCGCATCTCTT
GGCCACCCCTATTGACAGTGACAATGTGGCACTCGTTCTTAATTGTGTGTTAGCTGG
GCCTCTAGAACTTCTACTTCGGTCACCTTTAGACGAGAACTCAGCTCGTTTTCTGGTC
GCCAACGTGGTATTAGCCGTCGAACTTCTGCACAAGGATGGCGTTGTATATCGTGGC
ATCTCTCCCGATGTTCTTATGATAGATCGGAAAGGACGACTTCAGCTGGTTGATTTTC
GGTTTGCAAAGCAAATGTTCGGATGAGCGCACTTTCACAGTCTGTGGCATGGCTGATT
TCTTAGCACCCGAGATCATTCAAGGACAAGGTCATGGCCTGGCTTCTGACTGGTGGG
CGGTAGGTGTGTTAATGTACTTCATGTTGCAAACCTGAGCTTCCATTTGGATCATGGC
GGGACAACGAGCTTGAAATTTTTGGTAGAATAGCCCGTCGGCAGCTTACGTTTCCTT
CAAGTTTCAGCCCTGAAGCGGTTGACCTCATTGACAAGCTGCTGGTGGTGGACCCAA
CCAAGAGACTGGGCTGTGACAGCCATGGATCGCTTGCCATAAGGGAACATCCTTGG
TTCCGAGGTATAAACTGGGACAAGCACCTCGATTGCAGTGTGGAAGTTCCTTCAGAG
ATCATGACACGCCTTCAGTTGGCCATAGACTTTCTTCCCGTGGATGATAGTTATCAA
GTGTTTGATCTCCAACCCGATGAAGACGATCCACCATGGCTTGATGGCTGGTGATAG
CTTGATGGCTCGTAGATCCCCCTTCTCCAAGCATCAATGGCACAGTACCGAATGGCT
ATAACAGAAGATGCACATTAAGTGCTCCATGAACAGATAACCGTAGCGCTTAGGATTT
TTCGGTCGTCACAAATGACGGCTCTCTTGTGAGGTTCTGAATGTTGTGTACCCGATG
ATCTCTACTGGCACAAACCTCCAGGCTGAATCTTAAGGCCAGCTGTTTTAGGTGAGA
CGTTTACCTTGGTTCGAACTCACGCTCGTGTTGTTAAGCGCGAGTCGATGATGTATG

Physcomitrella patens
PK-9
Full-length
Nucleotide sequence
SEQ ID NO:17

[illegible][illegible]

FIGURE 2E

Nucleotide sequence of the full-length CK-1 from *Physcomitrella patens* (SEQ ID NO:18)

ATCCCGGGCTCACGTAGTGCCTGAAGTCTGTCTGAATTTTAGGGGATGAGAGGTAG
ATTTGAAGAATACTGGTGTCTAATTTTCTGTTAATTTTTCACCCTTGAGGTAGCTCAT
GGATTTGGGAGGTGATCGCATGAGAGCTCCTCAGAGGCAGTCTCGAGAATATCAAT
ATAGATCATTGGACGTCTTCACAGAGCAGCACGAGCAGTTGCAAAAGCAGCAGCAG
CAAGATGAGTATCAGAGAACAGAATTGAAGCTCGAGACACTGCCAAAAATGTTAAG
CAATGCGACCGTGTCTCTTCCCCTCGAAGCAGTCCGGATGGACGTAGACTACGTAC
AGTCGCGAATAAGTATGCTGTGGAAGGTATGGTTGGGAGTGGCGCATTCTGCAAGG
TGTATCAGGGCTCCGATTTGACGAACCACGAGGTTGTGGGCATCAAGCTGGAGGAT
ACGAGAACTGAGCACGCTCAGTTAATGCACGAGTCGCGCTTGTACAACATATTGCG
GGGTGGGAAGGGAGTGCCCAACATGAGATGGTTCGGAAAAGAGCAAGACTACAAT
GTGATGGTGCTAGACCTATTGGGGCCGAACCTGTTGCACCTCTTTAAGGTGTGTGGG
CTAAGGTTTTTCGTTGAAGACCGTGATTATGCTCGGTTACCAAATGATTGACCGGGTG
GAATACGTGCATTCTCGAGGGCTCGTTCACCGTGACCTGAAGCCGGATAACTTCCTC
ATGGGCTGCGGTTCGGCAAGGAAACCAAGTGTTTCATTATAGATTTTGGCTTGGCAAAG
GAGTACATGGACCCGGCAACACGAAGGCATATCCCTTACCGAGATAGGAAGAGCTT
CACAGGGACGGCACGGTACGCTAGTAGGAATCAGCACAGAGGAATCGAGCACAGT
AGAAGAGATGACATAGAATCACTTGGTTACATTCTTATGTACTTTCTAAGAGGCAAT
TTGCCATGGCAAGGGAAGGGCGGGCAACGCCTCACTGACCAGAAGCAACACGAGTA
CATGCACAACAAAATCAAGATGAACACCACTGTGGAGGAGCTTTGTGATGGGTATC
CCAGTCAATTTGCCGACTTTTTGCACCACGCGCGAAGTCTAGGTTTCTACGAGCAGC
CTGACTACTGTTACCTCCGAAGCTTGTTCCGTGATCTTTTCATTCAGAAAAAATTCCA

FIGURE 2E Continued

GCTCGACCATGTGTACGACTGGACTGTGTATACTCAACTCCCCCAGAATGGCTCTCT
GCAATCAGTGCGCAGCCAGAATTCCGCTGCTTCGTCCCATTGCAAAATCGACCTTC
GAATGTATCATATTGTCCACCCTTGACCAAGTCGGAGTTCGTCGTGAGGTTGTTGC
GGCGAATTAGGGCTTACGTTGGGAGGACTAGTGGTTCATCCTCTGCTCTGGTACTAA
AATAGCACAAGGTTGCTTACTGTTTCCCTCTCTCAAGTCTTACATGATTGTGAATGGG
GGTTTATGGAGTTGAGGATGAGGCAACTAAGCAGAGTGTAGGAAAAGAGTTGTAGA
CTCTCTAGTGTGTAGTGTGTAATCAAGGCTTCTAGCATTGTGTCGGTAGCTTGTATG
GATCAGACTAGAAATGACTTTATCCATTACAAGAATTTTACTCGGAAAGCCCATGA
CGGTGATGATTTCAATACGTTGCACAAGCAACTTTCTTCTGTAATTGAAATAGAGGA
TCTGGTCTGAGTATGAGAAGATGGGCATGTTAACGC

FIGURE 2F

Nucleotide sequence of the full-length CK-2 from *Physcomitrella patens* (SEQ ID NO:19)

ATCCCGGGTTGTCGAGGACGGAGAGAGAAGAGAGAGAGAGAGAGAGAGAGAGGTG
TTGTTTAGGGGAGGCATGCGGGAGCAGGATTGGTGTAAAGTTCGTAAGGAGAAGGG
AGTACATGCAAGTGCGTGCTTGTCGGATATCGGACAGCTGGATTTGTAAATAAGCGG
AGAGGAGGGTCGGTAATCAGGGGCGTACATCGATGGAGCCGCGTGTGGGAAACAA
GTATCGGCTGGGACGGAAAATTGGGAGCGGTTCCCTTGGGGAGATCTATCTTGGGAC
CAATGTTTCAGACCAATGAGGAGGTCGGAATAAAGCTGGAAAGCATCAAGACGAAGC
ATCCACAATTGCTGTACGAGTCCAAGCTCTACCGGATACTACAAGGAGGAACTGGG
ATTCCCAATATCAGATGGTTCGGGATAGAAGGAGACTACAATGTCTTGGTTCTGGAT
CTGTTGGGGCCAAGTCTCGAAGACCTTTTCAACTTCTGCAGCCGGAAGTTCTCTTTA
AAGACTGTTCTCATGCTTGCTGACCAGCTGATCAACAGAGTGGAGTATGTGCATGCG
AAAAGCTTTCTTCATAGAGACATCAAGCCTGATAATTTTCTAATGGGGCTTGGTAGG
CGAGCAAACCAGGTCTACATTATTGATTTTGGTCTTGCCAAGAAGTACCGCGACCCT
TCCACGCATCAGCATATTCCCTACAGGGAGAACAAAAATCTGACAGGGACTGCTCG
GTATGCAAGCATCAAACTCATCTTGGTATTGAGCAAAGCAGACGAGATGATTTGG
AATCTCTTGGATATGTGCTCATGTACTTCCTGAGAGGCAGTCTTCCATGGCAAGGAC
TGAAAGCGGGAACCAAGAAGCAGAAGTACGAGAAGATCAGTGAGAAAAAATGTC
CACGCCCATGAGGTCCTTTGTAAAAATTATCCTTCAGAATTCGCCTCGTACTTCCAC
TACTGCCGGTCCTTGCGTTTTGATGACAAACCCGACTATGCATATTTGAAAAGAATC
TTCCGTGACCTCTTTATTCGTGAGGGTTTTCAATTTGACTACGTTTTTGAAGTGGACAA
TTCTGAAGTACCAGCAGTCACAAATTTCCGGTGGCAGTTCAACTCGACTGGGTGCTT
CTGCAGGGCAAACCAGTGGTGCCTTGGAACTGGGGCTACAGGAAGCCGAGACCTG

FIGURE 2G

Nucleotide sequence of the full-length CK-3 from *Physcomitrella patens* (SEQ ID NO:20)

GCGTTAACGGGAGGAAGGTCGGGGGAAGAGACGCTTGAGGCTGCTGAAAGGGGAT
TCACTCAGCGTCCCCACCCATTCGTCAATCTGGCGCAGAAGATCGGAAAATCGGTCC
GACGGCCAGGTGTTATGTCCAAGGCCCGGGTTTACACAGATGTGAATGTCCAACGTC
CGAAAGATTATTGGGACTACGAGGCCCTCACCGTCCAATGGGGGGACCAAGACGAT
TACGAGGTAGTGCGTAAGGTGGGGCGAGGGAAATACAGTGAGGTTTTTGAAGGTGT
CAACGCCGTGAATAGTGAGCGTTGCGTTATGAAGATTTTGAAGCCAGTAAAGAAAA
AAAAGATCAAAAGAGAGATCAAGATTCTGCAAACCTTTGTGGAGGGGCCAACATT
GTGAAGCTTCTGGACATTGTCCGTGATCAGCAATCGAAGACACCCAGCCTAATTTTT
GAGTATGTGAACAATACTGATTTCAAAGTGCTCTACCCCACTCTTACAGACTTTGAT
ATCCGATACTACATTCATGAGCTGCTCAAGGCTTTGGACTATTGCCATTCTCAAGGG
ATTATGCACAGGGATGTGAAGCCACACAACGTGATGATTGACCATGAGCAGCGGAA
GCTTAGGCTTATTGACTGGGGACTTGCCGAATTCTATCATCCTGGCAAAGAGTATAA
TGTGCGTGTTGCCTCTAGGTACTTCAAGGGTCCTGAGCTGCTGGTTGATCTTCAAGAT
TATGATTACTCTCTCGACATGTGGAGCTTGGGGTGCATGTTTGCCGGCATGATATTTC
GGAAGGAGCCATTCTTTTATGGGCATGACAATTATGATCAACTTGTGAAGATTGCTA
AGGTGTTGGGAACTGATGAATTGAATTCCTATCTAAACAAATACCGCCTAGAGCTGG
ACCCCCATTTGGAAGCACTGGTTGGCAGGCATAGCAGGAAACCTTGGTCAAAGTTC
ATCAATGCTGATAATCAGCGTCTGGTTGTTCCAGAGGCTGTGGATTTTTTGGATAAG
CTTCTACGCTACGATCATCAAGACAGGCTGACTGCGAAGGAAGCTATGGCACATCC
CTATTTTTATCCCGTGAAGGTGTCGGAGGTTAGCAACCGTCGCAGTGCTTGATATGA

FIGURE 2F Continued

CAGCGGCCCACCGAACCAATGGATCCTTCTCGGCGCAGGCTTCCTGGAGGAGCAAA
TGGCTCCGGGGTCGCAAATGCTTTGGACTCATCTAAGCACAAAAGTCCTGGACTTGA
TGAATCTGCTAAGGATTCTGCTCTTGCTGTTGTGTCAGAACCAGAGCGCATGCATAC
ATCTTCGTATGCAACTCGGGGGGGTTCTTCCTCCAGGCGAGCTGTCCTATCTAGCAG
CAGGCCCTCAGGGGCATCAGCAGAAGTCGTAGATTCTCTCGAACAGGGAGCAGTA
AGCTTGGTCCCACCAGCTTACGGTCGTCAGCAGGGATGCAGAGGAGCTCTCCAGTTA
CTTCGGACCCAAAGCGGATATCTAGCCGCCATCCACAACCGCCATCTGCCAACTTGA
GGATTTACGAAGCCGCTATCAAGGGAGTTGAATCACTTTCTGTTGAGGTGGATCAAA
GCCGTTATAAGTAGGCCCAGGCTTGTGGTTATATAGCCGGGCTCTGTCTTCTATCAA
ACCCTCTTGTTATGTAGATGAGAGTTGCTCTACATTTGGCAACAGCCTGATTGAGGG
GAAAACGGTGGTTCTGTCCTACAATGGTGCTAAGACTACAGGTCTCTCATACTTAGG
AATGAATGGATCTCTATCTTGTTACCATCAAACCATTGTCAGTGCTTTGTGTGGTAGC
TCTCTGCCATACGATTCCTAAGGTTAACGC

[illegible][illegible]

1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308</
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ATCCCCGGGCGAGCCATGGCGCCACTTGCTTCGGCGAATGGGACTGTTTGACTTCTTC
GCTTCGCCCCCGCCTCGCCCTTCACCCTCCTCTGTTCTTGTCACAGCCTCCTCCTCCG
TCTCTGTCTGTTGGCTGGGTAAGTTTTGGGAGTGAGGAGGACGTGGTCATGGAAGAA
GAGCCCCCTCTTTTGTAGTGGACTGTTCGGTAAATTGGACCTGGAGCCTGCCGGCTC
ATCGCGTTTGCTTAGATTGTGGGCGGGTGCTGTTGAAATTCCTTGAACTTGCTACTGG
TCGGAAACGCTCGAATTGCGACTTTGATTGAAGGTCTGGTTGTTGCTGCGGTCGGGA
TCTTACTCAGTCTCTTCAATAGGACCTCTGAAGCAGTATGGGAGACTAGCAGTGGAAC
TCCAGAATTGAAAGTTATAAGTACTCCGACCTACGGAGGTCATTACGTGAAATATGT
TGTGGCGGGAAGTGAATTCGAAGTCACCGCGAGGTACAAGCCACCACTTCGTCCGAT
TGGGCGCGGAGCTTATGGAATCGTCTGTTCACTCTTTGATACCGTTACGGGTGAGGA
GGTGGCGGTCAAAAAGATTGGAAACGCCTTCGACAACAGGATCGATGCGAAGCGAA
CACTGCGTGAAATAAAACTCCTCCGGCATATGGATCATGAAAACGTCGTTGCCATTA
CAGACATCATTCGTCCCCCAACTAGGGAGAATTTCAACGACGTGTACATTGTATACG
AGTTGATGGATACGGACCTACACCAGATCATTCGTTCAAATCAAGCTCTCACAGAAG
ACCACTGTCAGTATTTTCTGTATCAAATCTTGCGGGGGCTTGAAGTACATCCATTCGGC
GAACGTCTTGACCGGGACTTGAAGCCCACCAACCTTCTCGTCAATGCCAATTGCGA
TTTGAAAATCGCAGATTTTGGCTTGGCACGCACTCTCTCTGAAACGGATTTTCATGAC
TGAGTATGTTGTAACGAGGTGGTACAGAGCTCCAGAGCTGCTCCTGAATTGTTACGC
ATACACTGCAGCTATTGACATTTGGTCTGTGGGGTGCACTTTCATGGAGTTGCTTAA
CCGATCTGCGTTGTTCCCTGGGAGAGACTATGTGCATCAGCTCCGCCTAATTACAGA
ACTCATCGGAACTCCTGAAGATAGGGATCTTGGGTTTTTGAGAAGCGACAATGCTAG

FIGURE 2I

Nucleotide sequence of the full-length MPK-3 from *Physcomitrella patens* (SEQ ID NO:22)

ATCCCGGGCTTGTATTGGCTCGGATAATTTATGTTGACAATTGATTTGTGAGGCTTCG
TATTGAGTCAGCGAGCAGGCTGAGAGTTCGGCAGCGAAGTTACACTCGACCTGGCT
GAAATTTGGAATTGAAGCGCGTGAAGCTTCATCTGTGATTTTGGAGGTTGTTTGACT
GATGAGAAGAGGTCTCTGAGCTGAGAATGTTTGCAATTTAGGGGCACCACCGGTTTG
TTGGAGTCCCTTGCCACTTATTACAATTGTTGGTTTACAAGCTCGACGAGTTTCAATC
GAACGTAGAGTTTTAGTCGGGTCGAGGATCTATGTATCCGCTCAGCGGAGAAGAGA
GCCTGATGTTGCCGAAGCGATCGTGTGGGATTTGACTAGAAAGAGGTGGACCGCAT
CAGAACTATTTATTCCTTGTGAGGGAAGGATCGAGGTTCCAATGGGTCTCACTCCGT
TTTCTTGTGTCACGGTTCAAGGTTATGTCCGGGTGGTCTACCCCGACGGCCACGTCG
AGAATCTGAGCAAATCTTGTAGCGTGCACGATCTTCTTCTGGGTAATCCAGACTACT
ATGTCTGCGGTAGCACCCCTTACACAATCACCAATCGTATGGCAGCGGAAGAGGTG
CTCGAGTATGGGGTGACCTACTTCGTTTGCGCAACGCCAAATGCCCAACCTTTCTTA
GAACGTCAGCCGAAGGTAGTACATCGAGGATCCAAGATTTTGCCACGATTTTCCAAA
CATGGGGTCCATGTGCGGGAGTTGCGAAGCCCGACGCATGGGAGCCAACAGTCACG
GAAGGTTTTTTGATTATCATTCAAGTAACGATGCAGCAGCTTGAATCCATACGAAACGA
GGGCCCAGAGCCTCACCTCGCTGGAGACCGACCATCGAAGCACCTTAAGCTCGTTTT
CATTCGGCATTGCTTGCGAGCACTTCGACTTCCTAGAATTTCAATAGACCTAATGGA
ATCGCCACTCCCTAATCTTTCCGGAGAGGCCTTATCGCCGACGGCAACTGCCAAAGA
CGAGATTACTCAGATGATACTAAAAAGTGCCGCAAGGTCCGAATTAGGAATGTATG
TTTCGAAGAGACAGGAATTCTATCTTCGAAGAGCGCGTAGGCGGCGTAAGTTTGCGT
GGAAGCCGGTTTTGCAGAGCATCTCCGAGATGAAGCCTGTCATGGAATTCCCACTC

FIGURE 2I Continued

CGATGGCTTACCGGGATAGTGGGTCTCCGCCGAAGAACGCCTCTACCCCATCCTTAC
CTGGCCCGAAGAACATTTACCGCCACGACAAGTGAGTGTCCCGCAAAGGAGCAGT
CCTCCGCCGAAGAACGTCTCACCACCTCCCCAGCCCGCATTTGTAGCGCGGACTGCG
TCGAAGTATTCTGCTGCATCTCAGCAAGTTCAACGAAATCGAGGCAACGCGAAATCT
CTTTATATGGCGTAGTTTGTGTCTCGACTGAACTCCTATCTATTCCCCCATCGAGATA
ACTGCATTTCGTTGGATAAAATTTCTCCAACATTTTTGCTCTTCATCCTCAAGCAGCTCC
TCAATGGCCAGTAATATGTTACGACATTGTGCACAACCTCCAATTACGTAGCGTTATT
CTGTAACCCACGTTTCATCGAGGTATCAAGGAATGGCGCAGTAAGCACTGCTACTTTG
TGCTTTGGTATCCCGTTGTGACGAGATGTCATGTCGCACCGTGCCTATCAGTGGGAT
TTTCTTGAGCGCAGATCTTGCTTCCGCAGTTTGTTCATAACGTTTTGGTTCGTAGGG
GGCCTAGACGGTACTATCAAGCAATGAGAAGTGTGCTGGTGTGGATTTGACAGCAA
TCTTTTGGAGGATTGTCTTTCCTATGTAGAACATAGCGAGGACACTTGCGCCTGGTG
GGCACATCCCATAGAACATAGTGCTTCACTTCTGGGTTGTTCACTACTAGGATCATA
TGACCTTCTCATCTATTTTCGGGCTTTGTTTCGAGCTCATGTACCATCGACTAGCGTC
ACTTTGACTGCGGTGATAATCGTTTGTCAATTTAGTGGAGCTTTGTAGATGATAGAT
GCCATTTGTACAGTAGCTTGGATGCTGTTTACAAGATAGCGGCAGCTAGAAGCCTTA
AACCTTTAGCTACCATGTATTATTTAAACCTATATGAAGTGAACGGCTGTGCAGAT
ATTGCCGTAAACGC

FIGURE 2J

Nucleotide sequence of the full-length MPK-4 from *Physcomitrella patens* (SEQ ID NO:23)

ATCCCGGGCGGTCGAGTCGTATTAGGTGTTGTTTCATTGTAAGGGTTCGGAAGCACG
GGGCACGGCGTATATAACCGTTCCCCTTGAACGTTGATCTCACCTTTGGAAGACCTGA
ATTGAGTAGCGTGCGGAAGCTGCATCGATCCGGAAGAGACGATGAGTAGGAGAGTG
AGAAGGGGAGGTCTTCGCGTCGCGGTGCCGAAGCAAGAGACTCCCGTCAGCAAATT
TTTGA CTGCCAGTGGAAC TTTCCAGGATGATGATATCAAGCTCAACCACACCGGGCT
TCGCGTCGTCTCTTCAGAACCTAACCTTCCTACGCAGACGCAGTCTAGCTCCCCAGA
TGGGCAACTGTCAATAGCAGACCTGGAGTTAGTGCGGTTCTTGGGAAAGGGTGCGG
GTGGAACCGTGCAGCTTGTCCGGCACAATGGACCAATGTCAATTATGCACTGAAG
GCGATACAAATGAATATCAACGAAACAGTGAGGAAGCAGATTGTTTCAGGAGCTGAA
AATCAACCAAGTGACGCACCAGCAGTGCCCTTATATCGTGGAATGCTTCCACTCCTT
CTACCACAACGGCGTCATATCCATGATCCTAGAGTACATGGACAGGGGGCTCGTTGTC
CGACATTATTAAGCAACAAAAGCAGATACCTGAGCCGTATTTGGCCGTCATTGCTAG
TCAAGTTCTGAAGGGATTGGAATACCTACACCAAGTCAGGCACATCATACTCGTGA
TATAAAGCCCTCCAACCTCCTCATCAATCACAAGGGTGAGGTCAAATATCTGATTT
TGGTGTCAGTGCTGTGTTGGTTCATTCCTTGGCCCAGCGAGACACGTTTCGTTGGGAC
TTGCACATATATGTCGCCAGAACGCCTTCAGGGGCGTTCGTATGCATACGACAGTGA
CCTATGGAGTTTAGGATTGACTCTTTTGGAGTGTGCGTTGGGTACCTTCCCATACAA
ACCAGCTGGAATGGAAGAGGGTTGGCAAATTTCTTCATCCTCATGGAATGTATAGT
TAATCAACCCCCCGCAGCCGCATCCCCTGACAAATTCTCCCCGAATTTTGTTCTTTT
ATTGAATCCTGCATCCGGAATGTCCCAGTGAACGACCATCAACTACTGATTACTT
AAACATCCGTTCTTGCAAAAGTACAACGAGGAAGAGTACCATTGAGCAAGATTTT

FIGURE 2J Continued

GTAACCTAAAGTTAGCCTCGCATGGCGTGCAGAGACTGTCACTACCACAAGCCTGAT
CCACCACTGAACTTCAAGGGACTTTACCAAAAGCATGGTCGAACTACCTCGCCAATC
CGCCACTTTCTCAATGCCTTTTCCTTATATAGTCATATGTGGTCAAGTTGAGAACGAT
ATCAAATCAGATTGACGGAAAAACATCTTCAACGCCGTTTCCCAACCTTATAGAAA
GTGGAGTTTTCTCAATGAGCCCCATTTGTCGCTGAGAACGTGCAGCTCATGAAACAA
TCCATAAGTGTGTTAATCGGGGTCTTATATTATCATCACCATGCTAGCTTTTTATGTT
ACCTGCACTTTTTCTTTCCTTATTGCACAGCATCGAACACTTCTTCGATACCCAAAAC
AATATTTCCATCTTCTTTCTTCTTTTTTTTTCACGTCTTGCGACAAGGAATTCCTCACGG
AGATTTTTCAACACTTTTCTCAAATGTTTTTTAGAGTTTTTAAACTGACAATTGAAGAG
GTCGGACCTACCGGACTCGC

FIGURE 2K

Nucleotide sequence of the full-length MPK-5 from *Physcomitrella patens* (SEQ ID NO:24)

ATCCCGGGAGAGGCTGATCTGATGCTACAGTTTCGTGTGCAGCTAGTCTTTAGAGAT
TCGGGCAACGCACTTGTTGAAGATCGGAACTTTCAAATCGGTCGAGTCGTATTAG
GTGTTGTTTCATTGTAAGGGTTCGGAAGCACGGGGCACGGCGTATATACCGTTCCCC
TTGAACGTTGATCTCACCTTTGGAAGACCTGAATTGAGTAGCGTGCGGAAGCTGCAT
CGATCCGGAAGAGACGATGAGTAGGAGAGTGAGAAGGGGAGGTCTTCGCGTCGCG
GTGCCGAAGCAAGAGACTCCCGTCAGCAAATTTTGGTACTGCCAGTGGAACCTTCCAG
GATGATGATATCAAGCTCAACCACACCGGGCTTCGCGTCGTCTCTTCAGAACCTAAC
CTTCTACGCAGACGCAGTCTAGCTCCCCAGATGGGCAACTGTCAATAGCAGACCTG
GAGTTAGTGCGGTTCTTAGGAAAGGGTGCGGGTGGAACCGTGCAGCTTGTCCGGCA
CAAATGGACCAATGTCAATTATGCACTGAAGGCGATACAAATGAATATCAACGAAA
CAGTGAGGAAGCAGATTGTTTCAGGAGCTGAAAATCAACCAAGTGACGCACCAGCAG
TGCCCTTATATCGTGGAATGCTTCCACTCCTTCTACCACAACGGCGTCATATCCATGA
TCCTAGAGTACATGGACAGGGGCTCGTTGTCCGACATTATTAAGCAACAAAAGCAG
ATACCTGAGCCGTATCTGGCCGTCATTGCTAGTCAAGTTCTGAAGGGATTGGAATAC
CTACACCAAGTCAGGCACATCATACTCGTGATATAAAGCCCTCCAACCTCCTCATC
AATCACAAGGGTGAGGTCAAAATATCTGATTTTGGTGTGAGTGCTGTGTTGGTTCAT
TCCTTGGCCCAGCGAGACACGTTTCGTTGGGACTTGCACATATATGTCGCCAGAACGC
CTTCAGGGGCGTTTCGTATGCATACGACAGTGACCTATGGAGTTTAGGATTGACTCTT
TTGGAGTGTGCGTTGGGTACCTTCCCATACAAACCAGCTGGAATGGAAGAGGGTTG
GCAAAATTTCTTCATCCTCATGGAATGTATAGTTAATCAACCCCCGCAGCCGCATC
CCCTGACAAATTCTCCCCGAATTTTGTCTTTTATTGAATCCTGCATCCGGAATGT

FIGURE 2K Continued

CCCAGTGAACGACCATCAACTACTGATTTACTTAAACATCCGTTCCCTGCAAAAGTAC
AACGAGGAAGAGTACCATTTGAGCAAGATTTTGTA ACTTAAAGTTAGCCTCGCATGG
CGTGCAGAGACTGTCACTACCACAAGCCTGATCCACCACTGAACTTCAAGGGACTTT
ACCAAAAGCATGGTCGAACTACCTCGCCAATCCGCCAGAGCTCA

[illegible]

FIGURE 2L

Nucleotide sequence of the full-length CPK-1 from *Physcomitrella patens* (SEQ ID NO:25)

ATCCCGGGTGTAGGCGGGCGAGGTTTCGATGCAATGGGGCAGTGTTATGGAAAGTTT
GATGATGGAGGCGAAGGGGAGGATTTGTTTGAGCGGCAGAAAGTGCAGGTTTCTAG
GACGCCAAAGCATGGATCGTGGAGCAATAGCAACCGAGGGAGCTTCAACAATGGCG
GGGGGGCCTCGCCTATGAGAGCCAAGACGTCGTTCTGGGAGCAGCCATCCGTCCCCG
CGGCATCCCTCAGCTAGTCCGCTCCCTCACTACACGAGCTCCCCAGCGCCTTCGACC
CCGCGACGGAACATTTTCAAAAGGCCTTTTCCTCCTCCTTCTCCCGCGAAGCACATT
CAGTCCAGTCTCGTGAAACGGCATGGCGCGAAGCCGAAAGAAGGAGGGGGCGATCCC
TGAGGCTGTTCGATGGTGAGAAGCCCTTGGATAAGCATTTCGGCTATCACAAGAACTT
CGCTACTAAGTATGAGCTGGGGCATGAAGTCGGTCGCGGGCACTTCGGTCACACAT
GTTACGCGAAAGTACGGAAGGGCGAGCATAAGGGACAAGCCGTGGCAGTGAAGAT
AATCTCGAAAGCGAAGATGACGACTGCTATTGCGATCGAGGACGTGGGACGAGAAG
TGAAAATTTTGAAGGCTCTGACGGGACACCAGAATTTGGTTCGATTCTACGATTCCT
GCGAGGACCATCTAAATGTGTACATTGTTATGGAATTATGTGAAGGAGGTGAATTAT
TGGATCGAATTTTGTCTCGGGGAGGGAAGTACTCGGAGGAAGACGCCAAGGTTGTT
GTGCGGCAGATTTTGAGCGTTGTTGCGTTTTGTACCTGCAAGGCGTTGTTACCGA
GATCTTAAGCCTGAGAATTTTCTGTTTACCACGAAGGATGAATATGCTCAGCTTAAG
GCCATTGATTTTGGATTGTCAGATTTTCATCAAACCCGATGAAAGACTGAACGATATC
GTTGGAAGCGCATACTACGTTGCGCCGGAGGTATTGCATAGGTTATATTCAATGGAA
GCTGACGTATGGAGCATTGGAGTCATCACGTACATTTTGTATGTGGTAGTCGACCG
TTTTGGGCGCGGACCGAGTCGGGCATTTTTCGTGCGGTGTTGAGGGCTGACCCGAGC
TTTGAAGAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTTCGTGAAGCGT

ATCCCGGGTGTAGGCGGGCGAGGTTTCGATGCAATGGGGCAGTGTTATGGAAAGTTT
GATGATGGAGGCGAAGGGGAGGATTTGTTTGAGCGGCAGAAAGTGCAGGTTTCTAG
GACGCCAAAGCATGGATCGTGGAGCAATAGCAACCGAGGGAGCTTCAACAATGGCG
GGGGGGCCTCGCCTATGAGAGCCAAGACGTCGTTCTGGGAGCAGCCATCCGTCCCCG
CGGCATCCCTCAGCTAGTCCGCTCCCTCACTACACGAGCTCCCCAGCGCCTTCGACC
CCGCGACGGAACATTTTCAAAAGGCCTTTTCCTCCTCCTTCTCCCGCGAAGCACATT
CAGTCCAGTCTCGTGAAACGGCATGGCGCGAAGCCGAAAGAAGGAGGGGGCGATCCC
TGAGGCTGTTCGATGGTGAGAAGCCCTTGGATAAGCATTTCGGCTATCACAAGAACTT
CGCTACTAAGTATGAGCTGGGGCATGAAGTCGGTCGCGGGCACTTCGGTCACACAT
GTTACGCGAAAGTACGGAAGGGCGAGCATAAGGGACAAGCCGTGGCAGTGAAGAT
AATCTCGAAAGCGAAGATGACGACTGCTATTGCGATCGAGGACGTGGGACGAGAAG
TGAAAATTTTGAAGGCTCTGACGGGACACCAGAATTTGGTTCGATTCTACGATTCCT
GCGAGGACCATCTAAATGTGTACATTGTTATGGAATTATGTGAAGGAGGTGAATTAT
TGGATCGAATTTTGTCTCGGGGAGGGAAGTACTCGGAGGAAGACGCCAAGGTTGTT
GTGCGGCAGATTTTGAGCGTTGTTGCGTTTTGTACCTGCAAGGCGTTGTTACCGA
GATCTTAAGCCTGAGAATTTTCTGTTTACCACGAAGGATGAATATGCTCAGCTTAAG
GCCATTGATTTTGGATTGTCAGATTTTCATCAAACCCGATGAAAGACTGAACGATATC
GTTGGAAGCGCATACTACGTTGCGCCGGAGGTATTGCATAGGTTATATTCAATGGAA
GCTGACGTATGGAGCATTGGAGTCATCACGTACATTTTGTATGTGGTAGTCGACCG
TTTTGGGCGCGGACCGAGTCGGGCATTTTTCGTGCGGTGTTGAGGGCTGACCCGAGC
TTTGAAGAAGCCCCTTGGCCTTCCATCTCTCCCGAAGCCAAGGATTTTCGTGAAGCGT

[illegible]

CTCCTGAATAAGGATATGCGGAAACGCATGACTGCTGCACAAGCTTTAACTCATCCA
TGGATTCTGAAGTAACAACGTGAAGATACCTCTGGATATCTTAGTGTACAGACTTGTG
AGGAATTATCTTCGTGCATCATCCATGAGAAAGGCTGCTTTGAAGGCCCTGTCAAAG
ACTTTAACCGAAGACGAGACTTTTTATCTACGTACTCAATTTATGCTGCTAGAACCA
AGTAACAACGGTCGTGTTACTTTTGAGAATTTTCTGAGACAGGCACTGCTGAAAAATTCA
ACAGAGGCCATGAAAGAGTCACGGGTTTTTGAAATTCTGGAATCGATGGATGGTCTT
CATTTCAAGAAAATGGACTTTTCAGAGTTCTGTGCAGCGGCCATTAGTGTTCTCCAG
TTAGAAGCCACAGAACGATGGGAGCAGCATGCTCGCGCAGCTTACGACATATTTGA
GAAAGAGGGTAACCGAGTCATTTATCCTGATGAACTTGCGAAAGAGATGGGACTAG
CACCAAATGTACCAGCCCAAGTGTTTCTAGATTGGATTAGACAGTCTGATGGTCGGC
TGAGTTTCACTGGGTTCACCAAGCTGCTACATGGAATTTCCAGCCGTGCTATCAAAA
ATCTCCAGCAGTGATTCTTTGCATCGTACAGTTCGGAATGGAGTTTTTAAGCTCTTTT
AGTTTCACTTCCGTCTTCAACTGCTGCTTCGCCTCGTCTCTGAGCTGTGATAGCGTAT
CTCAAGCATATGCACAACCTCGCATTTTTGCTGAAGTGATTTGTACCTCACATTAGTC
GGGCCTCTGGAACTTTCACTTATTTGGATTATTTATGTAGAAGTCCAGATCAAAAAG
CGAAAAGGAATGGCTAGATATTGTCACAAGAAGTAACATAGTCAAATTCAGGAGCA
CTTAAGCACACATTGAGTGCTTTTTATTGGAATTCTTAGATATGGAACCTGATGTTTCC
AAGGGAAGGGTCTATGAGGCAGAGAGTGGAATGTATAGACTGGCATATGGTTAAGT
GATCATTGGACTGCCGTTTCTACTCCGGTTGTCGTTAACGC

FIGURE 2M

Nucleotide sequence of the full-length CPK-2 from *Physcomitrella patens* (SEQ ID NO:26)

ATCCCGGGCGAACTGCGATCTGAGATTCCAACCTTGAAGGGCCTCGCGTAAGACCG
GATCTCGTTTCTTACGCTTTTTCGCGCTCGCGATATTTGTACATTGTTTCCTCTGGTTTT
ATTCGATTCCGCCTCTGAAAATGTGAACGGGCTGCAAGCTTGGTTTTGGAGCAACGT
TGGAGCATTGAAGGGTTGCGCTCGTCCCTGCCATTCTCGCTTCTGCTCTGGCCTAT
GTCATGACGACGTGAAGGAGAGGATTTGAGGGTTTTGTAAGTGATATAATCCTCCCC
GAGGAGATTTCTGTGAGTTGATTAACCTTGGATCAGCGACATGGGGAACACTAGTTCG
AGGGGATCGAGGAAGTCCACTCGGCAGGTGAATCAGGGAGTCGGGTCTCAAGACAC
CCGAGAGAAGAATGATAGCGTCAATCCAAAGACGAGACAGGGTGGTAGCGTTGGCG
CAAACAACCTATGGCGGAAAGCCAAGCAGTGGTGCTCAGGCCGGAGAACGATCCACC
TCTGCGCCCGCTGCTCTGCCGAGGCCGAAGCCAGCATCGAGGTCAGTATCCGGTGTT
TTGGGTAAGCCGCTGTCAGATATTCGTCAATCTTACATCCTGGGACGGGAGCTTGGC
CGAGGGCAGTTCGGAGTGACTTACTTGTGTACTGACAAGATGACGAATGAGGCGTA
CGCGTGCAAGAGCATCGCCAAACGGAACTGACCAGTAAGGAGGATATCGAGGATG
TTAAGCGGGAGGTTTCAGATTATGCATCACCTGTCGGGGACACCCAATATCGTGGTGT
TAAAGGATGTGTTTCGAGGACAAGCATTCCGTGCATCTTGTGATGGAGCTCTGTGCAG
GTGGCGAGCTCTTCGATCGCATCATTGCCAAGGGGCATTACAGTGAGCGCGCCGCTG
CCGATATGTGCAGAGTCATCGTCAATGTGGTGCACAGATGCCACTCATTAGGGGTCT
TCCATCGGGATCTCAAGCCAGAGAATTTTCTGTTGGCCAGCAAGGCTGAGGATGCGC
CTCTGAAGGCCACAGACTTCGGTCTGTCAACTTTCTTTAAGCCAGGAGATGTGTTCC
AGGATATTGTTGGAAGTGCGTATTACGTGGCCCCTGAAGTTTTGAAGAGAAGTTATG
GTCCTGAAGCTGATGTTTGGAGTGCAGGCGTGATTGTGTACATTCTGCTGTGTGGTG

FIGURE 2M Continued

TACCCCCCTTCTGGGCTGAAACTGAGCAGGGTATCTTTGACGCTGTGCTCAAAGGGC
ACATAGACTTCGAGAACGATCCATGGCCGAAAATCTCCAACGGGGCTAAGGATTG
GTGAGGAAAATGCTAAACCCTAACGTGAAGATACGTCTGACGGCACAGCAGGTGTT
GAACCATCCATGGATGAAGGAAGATGGTGATGCTCCAGACGTGCCACTCGACAATG
CGGTGTTGACCAGACTGAAAAATTTCTCAGCCGCCAACAAGATGAAAAAGCTGGCG
CTGAAGGTGATTGCAGAGAGTCTGTCTGGAGGAAGAGATCGTGGGGTTGAGGGAGAT
GTTCAAATCCATAGATACAGACAACAGCGGCACGGTGACGTTTCGAGGAGCTTAAGG
AAGGGTTGCTGAAGCAGGGCTCAAACTTAATGAATCGGACATCAGGAAACTAATG
GAAGCTGCAGATGTCGATGGAAACGGCAAGATCGACTTCAACGAGTTCATATCGGC
AACAATGCACATGAACAAGACGGAGAAAGAGGATCACCTTTGGGCAGCATTTCATGC
ATTTTCGACACGGACAATAGCGGGTATATCACCATCGACGAGCTTCAGGAAGCAATG
GAGAAGAATGGAATGGGAGATCCTGAGACCATCCAAGAGATCATCAGCGAGGTGG
ACACAGACAACGACGGAAGAATAGACTACGACGAGTTCGTAGCCATGATGCGCAAG
GGCAATCCTGGCGCTGAAAACGGAGGAACGGTGAACAAGCCCAGACACAGGTAGT
AGCTCCTGGTTGCCAATTTGACGACGGGTTTGGCAAGGCAACAGTAGTTGTTGTTAG
CTTTCAGATTCAGGTTCGGTATTGTTTCATGCCCTCCTTTGTCTCGAACAATGGACTCT
AGGCCTTTCCAATGGAAAAGCTATTCCAACAGGGTTTGCATAACGTGTAGTAGAATG
AAAGCATTGCCTGGGGGGTGTACAGTGCCTGTGATCTTGTGGAGTTCTCGTAGGATG
GCTTCGGTTGGATCTCGTTAACGC

FIGURE 3A

Deduced amino acid sequence of PK-6 from *Physcomitrella patens* (SEQ ID NO:27)

MGVDMKAPAKQSLGVGLLLCSVVILSVVSSVYGQVQTPVDTTGLISMWYDLKQSQSL
TGWTQNASNPCGQQWYGVVCDGSSVTEIKIGSRGLNGNFNPSYFQNAFKKLRFDASN
NNIEGNIPQQFPTSLTQMILNNNKLTGGLPQFDQLGALTVVNLSNNNLTGNMNPNYFNV
IVNVETFDVSYNQLEGTLPDSILNLAKLRFLNLQNNKFNGKLPDDFSRLKNLQTFNIEND
QFTGNYP SGLPSNSRVGGNRLTFPPPPAPGTPAPRTPSPSGTSNGSSSHLPLGAIIGIAAGG
AVLLLLLALGICLCCRKRSKKALGDPEATTSSRRPWFTPPLSAKSQSDPSKSIDKTTKRNI
FGSSKSEKKSSKHRVFEPAPLDKGAADPEVVKASPPVKVLKAPPSFKGISGLGAGHSKAT
IGKVNKS NIAATPFSVADLQAATNSFSQDNLIGEGSMGRVYRAEFPNGQVLAVKKIDSS
ASMVQNEDDFLSVVDSLARLQHANTAELVGYCIEHDQRLLVYEYVSRGTLNELLHFSG
ENTKALSWNVRIKIALGSARALEYLHEVCAPPVVHHNFK SANILLDDELNPHVSDCGLA
ALAPSGSERQVSAQMLGSFGYSAPEYAMSGTYTVKSDVYSFGVVMLELLTGRKSLDSS
RPRSEQSLVRWATPQLHDIDALARMVDPSLKG IYPAKSLSRFADIVALCVQPEPEFRPPM
SEVVQALVRLMQRASLSKRRSESAVGIESNEPSETSL*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

FIGURE 3B

Deduced amino acid sequence of PK-7 from *Physcomitrella patens* (SEQ ID NO:28)

MSVSGMDNYEKLEKVGEGTYGKVYKARDKRSGQLVALKKTRLEMEEEGVPSTALREV
SLLQMLSHSMYIVRLLCVEHVEKGSKPMLYLVEFYMDTDLKKYIDLHGRGPSGKPLPPK
VVQSFMYYQLCTGLAHCHGHGVMHRDLKPQNLLVDKQTRRLKIADLGLGRAFTVPMKS
YTHEIVTLWYRAPEVLLGATHYSLPVDIWSVGCIFAELVRKMPLFTGDSELQQLLHIFRL
LGTPNETIWPGVSQHRDWHEFPQWRPQDLSLAVPGLSAVGLDLLAKMLVFEPKSRISAK
AALSHTYFADV DKTAT

MSVSGMDNYEKLEKVGEGTYGKVYKARDKRSGQLVALKKTRLEMEEEGVPSTALREV
SLLQMLSHSMYIVRLLCVEHVEKGSKPMLYLVEFYMDTDLKKYIDLHGRGPSGKPLPPK
VVQSFMYYQLCTGLAHCHGHGVMHRDLKPQNLLVDKQTRRLKIADLGLGRAFTVPMKS
YTHEIVTLWYRAPEVLLGATHYSLPVDIWSVGCIFAELVRKMPLFTGDSELQQLLHIFRL
LGTPNETIWPGVSQHRDWHEFPQWRPQDLSLAVPGLSAVGLDLLAKMLVFEPKSRISAK
AALSHTYFADV DKTAT

FIGURE 3C

Deduced amino acid sequence of PK-8 from *Physcomitrella patens* (SEQ ID NO:29)

MADAKEELALRTEMHWA VRSNDVGLLR TILKKDKQLVNAADYDKRTP LHIAASLDCV
PVAKVLLAEGAELNAKDRWGKSPRGEAESAGYMEMVKLLKDYGAESHAGAPRGHVE
SLIQVAPPLPSNRDWEIAPSEIELDTSELIGKGAFGEIRKALWRGTPVAVKTIRPSLSNDR
MVIKDFQHEVQLLVKVRHPNIVQFLGAVTRQRPLMLVTEFLAGGDLHQLLRSNP NLAP
DRIVKYALDIARGMSYLHNRSKPIIHRDLKPRNIIVDEEHELKVGDFGLSKLIDVKLMHD
VYKMTGGTGSYRYMAPEVFEHQPYDKSVDVFSFGMILYEMFEGVAPFEDKDAYDAAT
LVARDDKRPEMRAQTYP PQMKALIEDCWSPYTPKRPPFVEIVKKLEV MYEDCLLR LPK
DRRH LRDILHLRRNP ADS*

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FIGURE 3E

Deduced amino acid sequence of CK-1 from *Physcomitrella patens* (SEQ ID NO:31)

MDLGGDRMRAPQRSREYQYRSLDVFTEQHEQLQKQQQQDEYQRTELKLETLPKMLS
NATVSSSPRSSPDGRRLRTVANKYAVEGMVGSGAFCKVYQGSDLTNHEVVGIKLEDTR
TEHAQLMHESRLYNILRGGKGVPNMRWFGKEQDYNMVLDDLGPNNLLHLFKVCGLRF
SLKTVIMLG YQMIDRVEYVHSRGLVHRDLKPDNFLMGCGRQGNQVFIIDFGLAKEYMD
PATRRHIPYRDRKSFTGTARYASRNQHRGIEHSRRDDIESLGYILMYFLRGNLPWQGKG
GQRLTDQKQHEYMHNKIKMNTTVEELCDGYPSQFADFLHHARSLGFYEQPDYCYLRSL
FRDLFIQKKFQLDHVYDWTVYTQLPQNGSLQSVRSQNSAASSHLQNRPSNVSYCPPLTK
SEFRREVVAAN*

MDLGGDRMRAPQRSREYQYRSLDVFTEQHEQLQKQQQQDEYQRTELKLETLPKMLS
NATVSSSPRSSPDGRRLRTVANKYAVEGMVGSGAFCKVYQGSDLTNHEVVGIKLEDTR
TEHAQLMHESRLYNILRGGKGVPNMRWFGKEQDYNMVLDDLGPNNLLHLFKVCGLRF
SLKTVIMLG YQMIDRVEYVHSRGLVHRDLKPDNFLMGCGRQGNQVFIIDFGLAKEYMD
PATRRHIPYRDRKSFTGTARYASRNQHRGIEHSRRDDIESLGYILMYFLRGNLPWQGKG
GQRLTDQKQHEYMHNKIKMNTTVEELCDGYPSQFADFLHHARSLGFYEQPDYCYLRSL
FRDLFIQKKFQLDHVYDWTVYTQLPQNGSLQSVRSQNSAASSHLQNRPSNVSYCPPLTK
SEFRREVVAAN*

FIGURE 3F

Deduced amino acid sequence of CK-2 from *Physcomitrella patens* (SEQ ID NO:32)

MEPRVG NKYRLGRKIGSGSFGEIYLG TNVQTNEEVGIKLESIKTKHPQLLYESKLYRILQ
GGTGIPNIRWFGIEGDYNVLVLDLLGPSLEDLFNFCSRKFSLKTVLMLADQLINRVEYVH
AKSFLHRDIKPDNFLMGLGRRANQVYIDFGLAKKYRDPSTHQHIPYRENKNLTGTARY
ASINTHLGIEQSRDDLES LGYVLMYFLRGSLPWQGLKAGTKKQKYEKISEKKMSTPIEV
LCKNYPSEFASYFHYCRSLRFDDKPDYAYLKRIFRDLFIREGFQFDYVFDWTILKYQQSQ
ISGGSSTRLGASAGQTSGALGTGATGSRDLQRPTEPMDPSRRRLPGGANGSGVANALDS
SKHKSPGLDESAKDSALAVVSEPERMHTSSYATRGGSSSRRAVLSSSRPSGASAEVVDSS
RTGSSKLGPTSLRSSAGMQRSSPVTSDPKRISSRHPQPPSANLRIYEAAIKGVESLSVEVD
QSR YK*

MEPRVG NKYRLGRKIGSGSFGEIYLG TNVQTNEEVGIKLESIKTKHPQLLYESKLYRILQ
GGTGIPNIRWFGIEGDYNVLVLDLLGPSLEDLFNFCSRKFSLKTVLMLADQLINRVEYVH
AKSFLHRDIKPDNFLMGLGRRANQVYIDFGLAKKYRDPSTHQHIPYRENKNLTGTARY
ASINTHLGIEQSRDDLES LGYVLMYFLRGSLPWQGLKAGTKKQKYEKISEKKMSTPIEV
LCKNYPSEFASYFHYCRSLRFDDKPDYAYLKRIFRDLFIREGFQFDYVFDWTILKYQQSQ
ISGGSSTRLGASAGQTSGALGTGATGSRDLQRPTEPMDPSRRRLPGGANGSGVANALDS
SKHKSPGLDESAKDSALAVVSEPERMHTSSYATRGGSSSRRAVLSSSRPSGASAEVVDSS
RTGSSKLGPTSLRSSAGMQRSSPVTSDPKRISSRHPQPPSANLRIYEAAIKGVESLSVEVD
QSR YK*

FIGURE 3G

Deduced amino acid sequence of CK-3 from *Physcomitrella patens* (SEQ ID NO:33)

MSKARVYTDVNVQRPKDYWDYEALTVQWGDQDDYEVVRKVGRGKYSEVFEGVNAV
NSERCVMKILKPVK KKKIKREIKILQNLCGGPNIVKLLDIVRDQQSKTPSLIFEYVNNTDF
KVL YPTLTDFDIRYYIHELLKALDYCHSQGIMHRDVKPHNVMIDHEQRKLRLIDWGLAE
FYHPGKEYNVRVASRYFKGPELLVDLQDYDYSLDMWSLGCMFAGMIFRKEPFFYGH
NYDQLVKIAKVLGTDELNSYLNKYRLELDPHLEALVGRHSRKPWSKFINADNQRLVVP
EAVDFLDKLLRYDHQDRLTAKEAMAHYPYFYPVKVSEVSNRRSA*

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FIGURE 3H

Deduced amino acid sequence of MPK-2 from *Physcomitrella patens* (SEQ ID NO:34)

METSSGTPELKVISTPTYGGHYVKYVVAGTDFEVTARYKPPLRPIGRGAYGIVCSLFDTV
TGEEVAVKKIGNAFDNRIDAKRTLREIKLLRHMDHENVVAITDIIRPPTRENFNDVYIVY
ELMDTDLHQIIRSNQALTEDHCQYFLYQILRGLKYIHSANVLHRDLKPTNLLVNANCDL
KIADFGLARTLSETDFMTEYVVTRWYRAPELLNCSAYTAAIDIWSVGCIFMELLNRSAL
FPGRDYVHQLRLITELIGTPEDRDLGFLRSDNARRYIKHLPRQSPIPLTQKFRGINRSALDL
VEKMLVFDPAKRITVEAALAHPYLASLHDINDEPASVSPFEFDFEPPISEEHKDLIWRE
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FIGURE 3I

Deduced amino acid sequence of MPK-3 from *Physcomitrella patens* (SEQ ID NO:35)

MGLTPFSCVTVQGYVRVVYPDGHVENLSKSCSVHDLNPDYYVCGSTPYTITNRMA
AEEVLEYGVITYFVCATPNAQPFLERQPKVVHRGSKILPRFSKHGVHVRELRSPTHGSQQ
SRKVFDYHSVTMQQLESIRNEGPEPHLAGDRPSKHLKLVFIRHCLRALRLPRISIDLMESP
LPNLSGEALSPTATAKDEITQMILKSAARSELGMYVSKRQEFYLRRARRRRKFAWKPVL
QSISEMKPVMEFHTPMAYRDSGSPPKNASTPSLPGPKNISPPRQVSVQVRSSPPPKNVSPP
PQPAFVARTASKYSAASQQVQRNRGNAKSLYMA*

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FIGURE 3J

Deduced amino acid sequence of MPK-4 from *Physcomitrella patens* (SEQ ID NO:36)

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSS
SPDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQEL
KINQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIHKQKQIPEPYLAVIASQVL
KGLEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSP
ERLQGRSYAYDSDLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAAS
PDKFSPEFCSFIESCIRKCPSERPSTTDLLKHPFLQKYNEEEYHLSKIL*

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSS
SPDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQEL
KINQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIHKQKQIPEPYLAVIASQVL
KGLEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSP
ERLQGRSYAYDSDLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAAS
PDKFSPEFCSFIESCIRKCPSERPSTTDLLKHPFLQKYNEEEYHLSKIL*

FIGURE 3K

Deduced amino acid sequence of MPK-5 from *Physcomitrella patens* (SEQ ID NO:37)

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSSS
PDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQELKI
NQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIKQKQIPEPYLAVIASQVLKG
LEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSPERL
QGRSYAYDSLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAASPK
FSPEFCSFIESCIRKCPSERPSTDLLKHPFLQKYNEEYHLSKIL*

MSRRVRRGGLRVAVPKQETPVSKFLTASGTFQDDDIKLNHTGLRVVSSEPNLPTQTQSSS
PDGQLSIADLELVRFLGKGAGGTVQLVRHKWTNVNYALKAIQMNINETVRKQIVQELKI
NQVTHQQCPYIVECFHSFYHNGVISMILEYMDRGSLSDIKQKQIPEPYLAVIASQVLKG
LEYLHQVRHIIHRDIKPSNLLINHKGEVKISDFGVSAVLVHSLAQRDTFVGTCTYMSPERL
QGRSYAYDSLWSLGLTLLECALGTFPYKPAGMEEGWQNFFILMECIVNQPPAAASPK
FSPEFCSFIESCIRKCPSERPSTDLLKHPFLQKYNEEYHLSKIL*

FIGURE 3L

Deduced amino acid sequence of CPK-1 from *Physcomitrella patens* (SEQ ID NO:38)

MGQCYGKFDDGGEGEDLFERQKVQVSRTPKHGWSNSNRGSFNNGGGASPMRAKTSFG
SSHPSPRHPSASPLPHYTSSPAPSTPRRNIFKRPFPPSPAKHIQSSLVKRHGAKPKEGGAIP
EAVDGEKPLDKHFGYHKNFATKYELGHEVGRGHFGHTCYAKVRKGEHKGQAVAVKIIS
KAKMTTAIAIEDVGREVKILKALTGHQNLVRFYDSCEDHLNVYIVMELCEGGELLDRLS
RGGKYSEEDAKVVVRQILSVVAFCHLQGVVHRDLKPENFLFTTKDEYAQLKAIDFGLSD
FIKPDERLNDIVGSAYYVAPEVLHRLYSMEADVWSIGVITYILLCGSRPFWARTESGIFRA
VLRADPSFEEAPWPSISPEAKDFVKRLLNKDMRKRMTAAQALHPWIRSNNVKIPLDILV
YRLVRNYLRASSMRKAALKALSKTLTEDETFYLRTQFMILLEPSNNGRVTFENFRQALLK
NSTEAMKESRVFEILESMDGLHFKKMDFSEFCAAISVLQLEATERWEQHARAAYDIFEK
EGNRVIYPDELAKEMLAPNVPAQVFLDWIRQSDGRLSFTGFTKLLHGISSRAIKNLQQ*

MGQCYGKFDDGGEGEDLFERQKVQVSRTPKHGWSNSNRGSFNNGGGASPMRAKTSFG
SSHPSPRHPSASPLPHYTSSPAPSTPRRNIFKRPFPPSPAKHIQSSLVKRHGAKPKEGGAIP
EAVDGEKPLDKHFGYHKNFATKYELGHEVGRGHFGHTCYAKVRKGEHKGQAVAVKIIS
KAKMTTAIAIEDVGREVKILKALTGHQNLVRFYDSCEDHLNVYIVMELCEGGELLDRLS
RGGKYSEEDAKVVVRQILSVVAFCHLQGVVHRDLKPENFLFTTKDEYAQLKAIDFGLSD
FIKPDERLNDIVGSAYYVAPEVLHRLYSMEADVWSIGVITYILLCGSRPFWARTESGIFRA
VLRADPSFEEAPWPSISPEAKDFVKRLLNKDMRKRMTAAQALHPWIRSNNVKIPLDILV
YRLVRNYLRASSMRKAALKALSKTLTEDETFYLRTQFMILLEPSNNGRVTFENFRQALLK
NSTEAMKESRVFEILESMDGLHFKKMDFSEFCAAISVLQLEATERWEQHARAAYDIFEK
EGNRVIYPDELAKEMLAPNVPAQVFLDWIRQSDGRLSFTGFTKLLHGISSRAIKNLQQ*



FIGURE 3M

Deduced amino acid sequence of CPK-2 from *Physcomitrella patens* (SEQ ID NO:39)

MGNTSSRGSRKSTRQVNQGVGSQDTREKND SVNPKTRQGGSVGANNYGGKPSSGAQA
GERSTSAPAALPRPKPASRSVSGVLGKPLSDIRQSYILGRELGRGQFGVTYLCTDKMTNE
AYACKSIKRKLT SKEDIEDVKREVQIMHHLSGTPNIVVLKDVFEDKHSVHLMELCAG
GELFDRIIAKGHYSERAAADMCRVIVNVVHRCHSLGVFHRDLKPENFLLASKAEDAPLK
ATDFGLSTFFKPGDVFQDIVGSAYYVAPEVLKRSYGPEADVWSAGVIVYILLCGVPPFWA
ETEQGIFDAVLKGHIDFENDPWPKISNGAKDLVRKMLNPNVKIRLTAQQVLNHPWMKED
GDAPDVPLDNAVLTRLKNFSAANKMKKLALKVIAESLSEEEIVGLREMFKSIDTDNSGTV
TFEELKEGLLKQGSKLNESDIRKLMEEADVDGNGKIDFNEFISATMHMKNKTEKEDHLWA
AFMHFDTDNSGYITIDELQEAMEKNGMGDPETIQEIISEVDTDNDGRIDYDEFVAMMRK
GNPGAENG GTVNKPRHR

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Figure 4 shows a schematic diagram of the genetic construct. The construct is a linear DNA molecule containing several key elements. From left to right, these elements are: the LB OCS3 origin of replication, the NPTII gene (neomycin phosphotransferase II) under the control of the AtAct2-i promoter, the Super promoter, the "Gene of Interest" (indicated by a shaded arrow), the NOSpA promoter, and the RB (Right Border) element. The diagram illustrates the organization and components of the genetic construct used in the study.

FIGURE 4

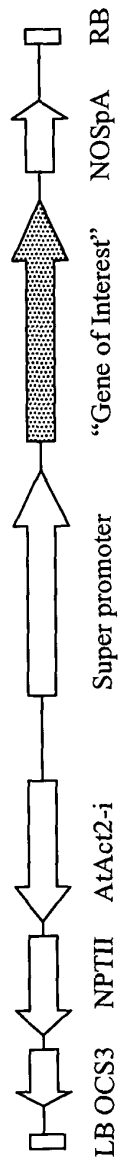
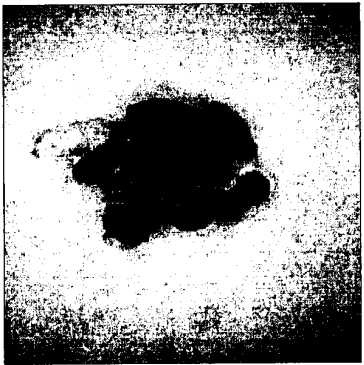
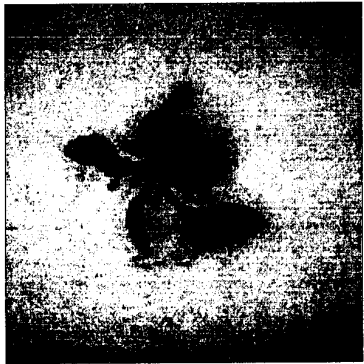
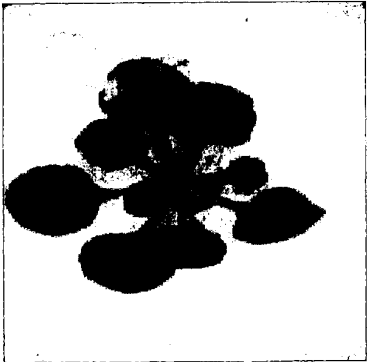
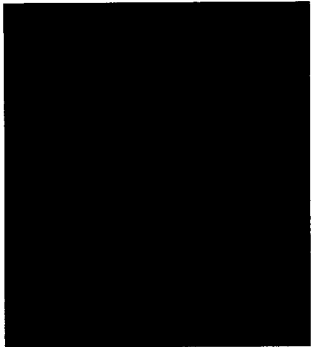
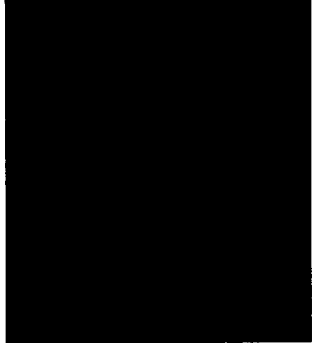


Figure 5



PpPK-6
Drought



Control
Drought

Figure 6



PpPK-7
Drought



Control
Drought

Figure 7

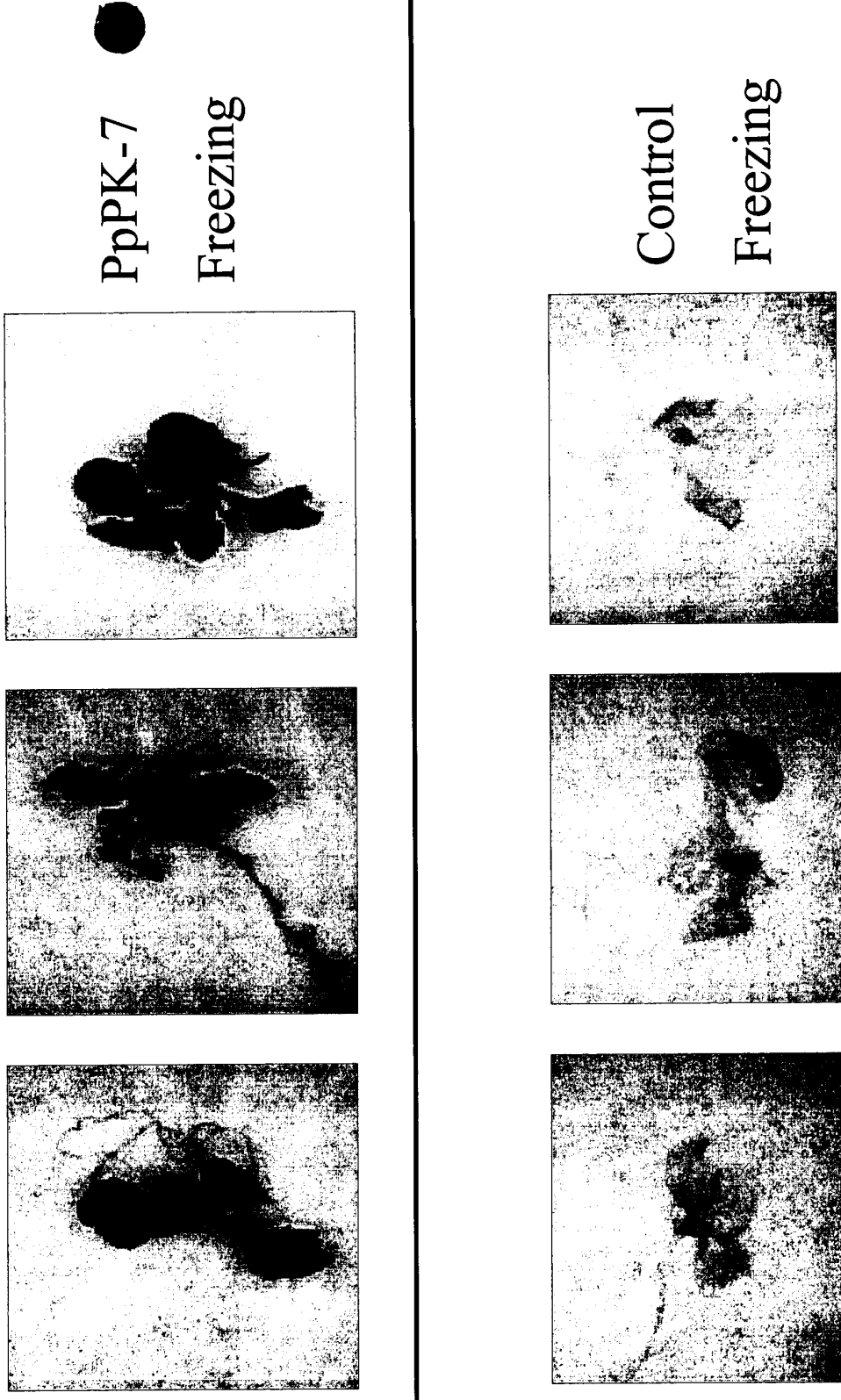


Figure 8

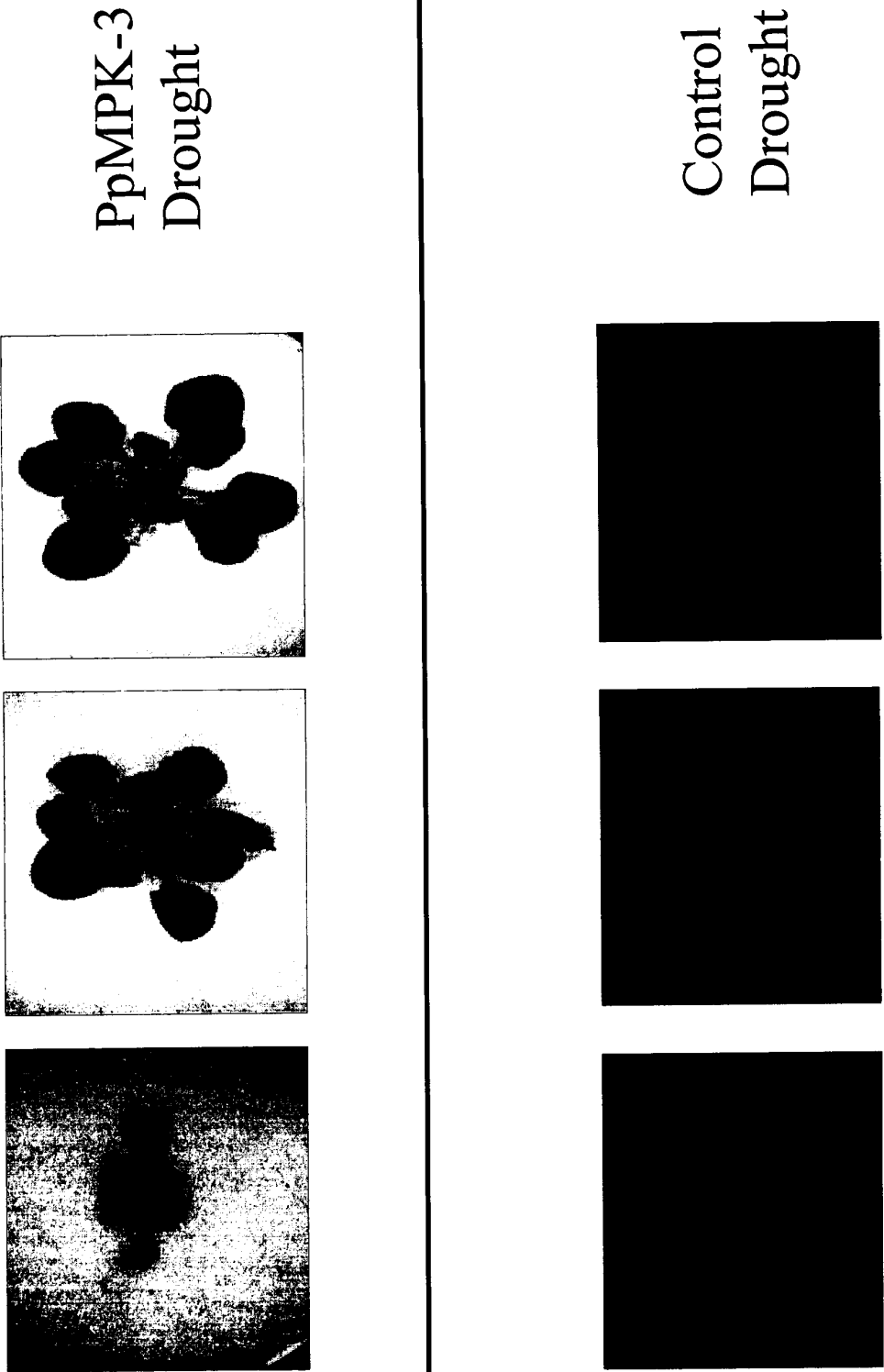


Figure 9

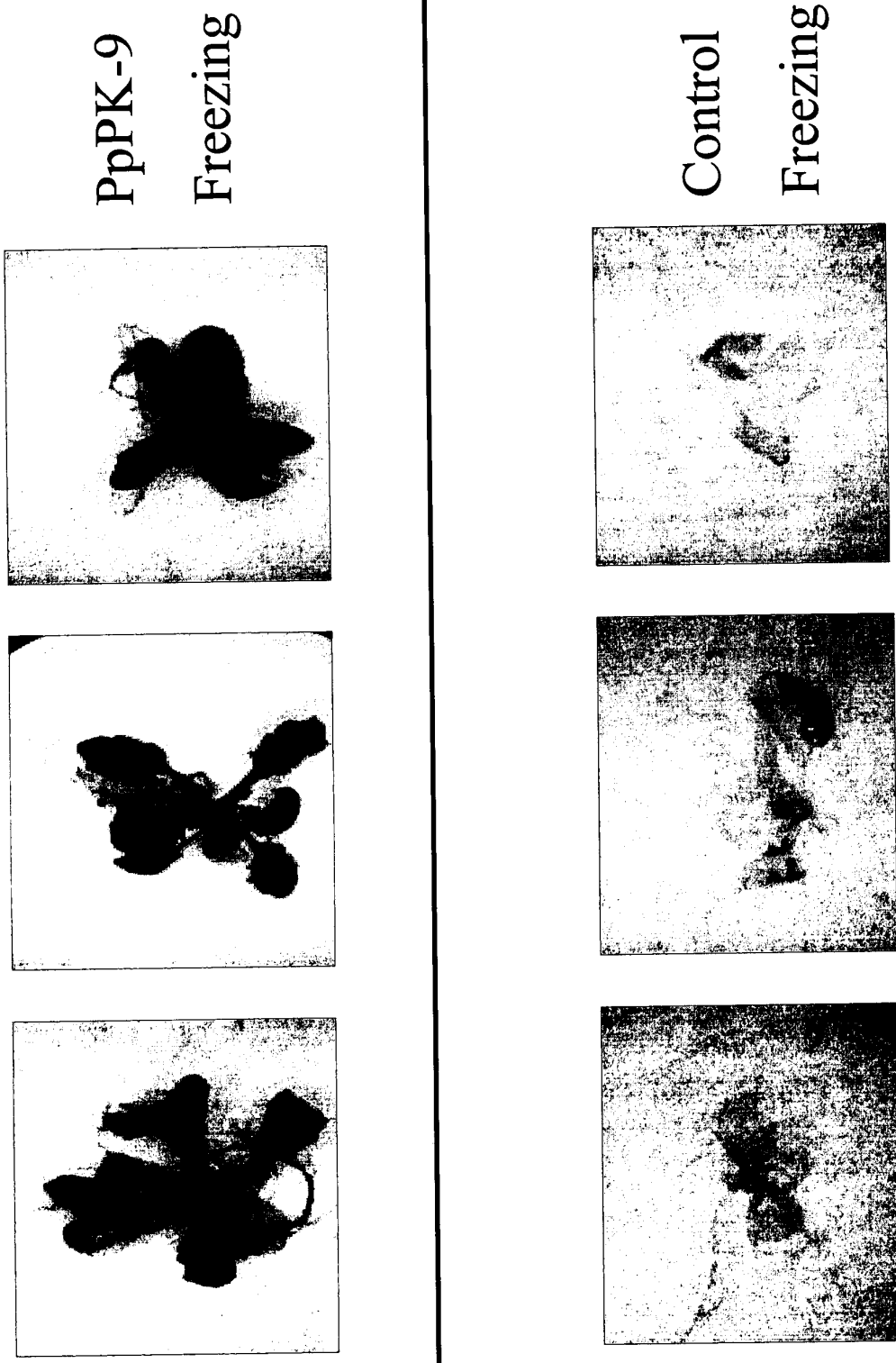


Figure 10

Figure 10

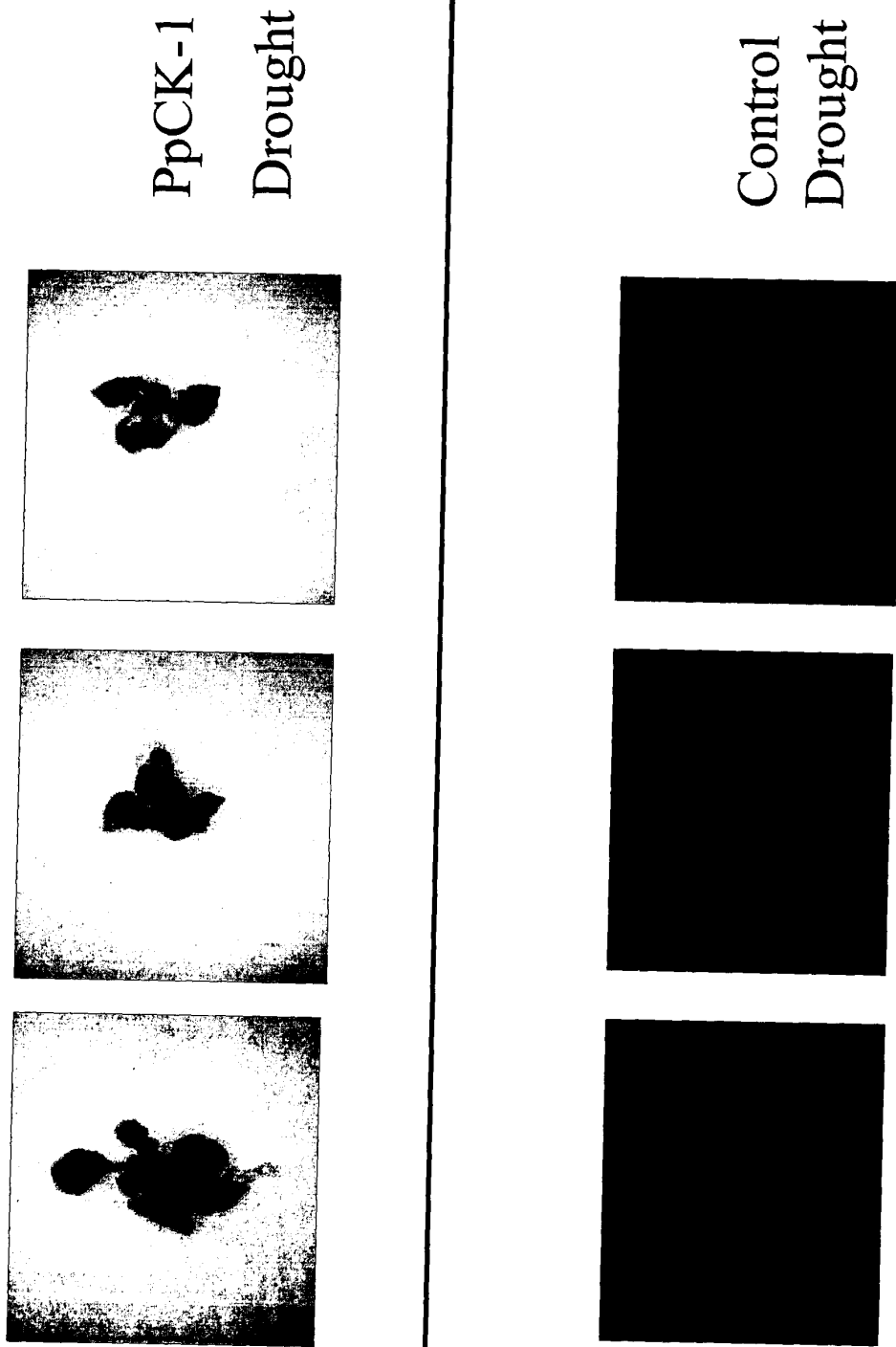


Figure 11

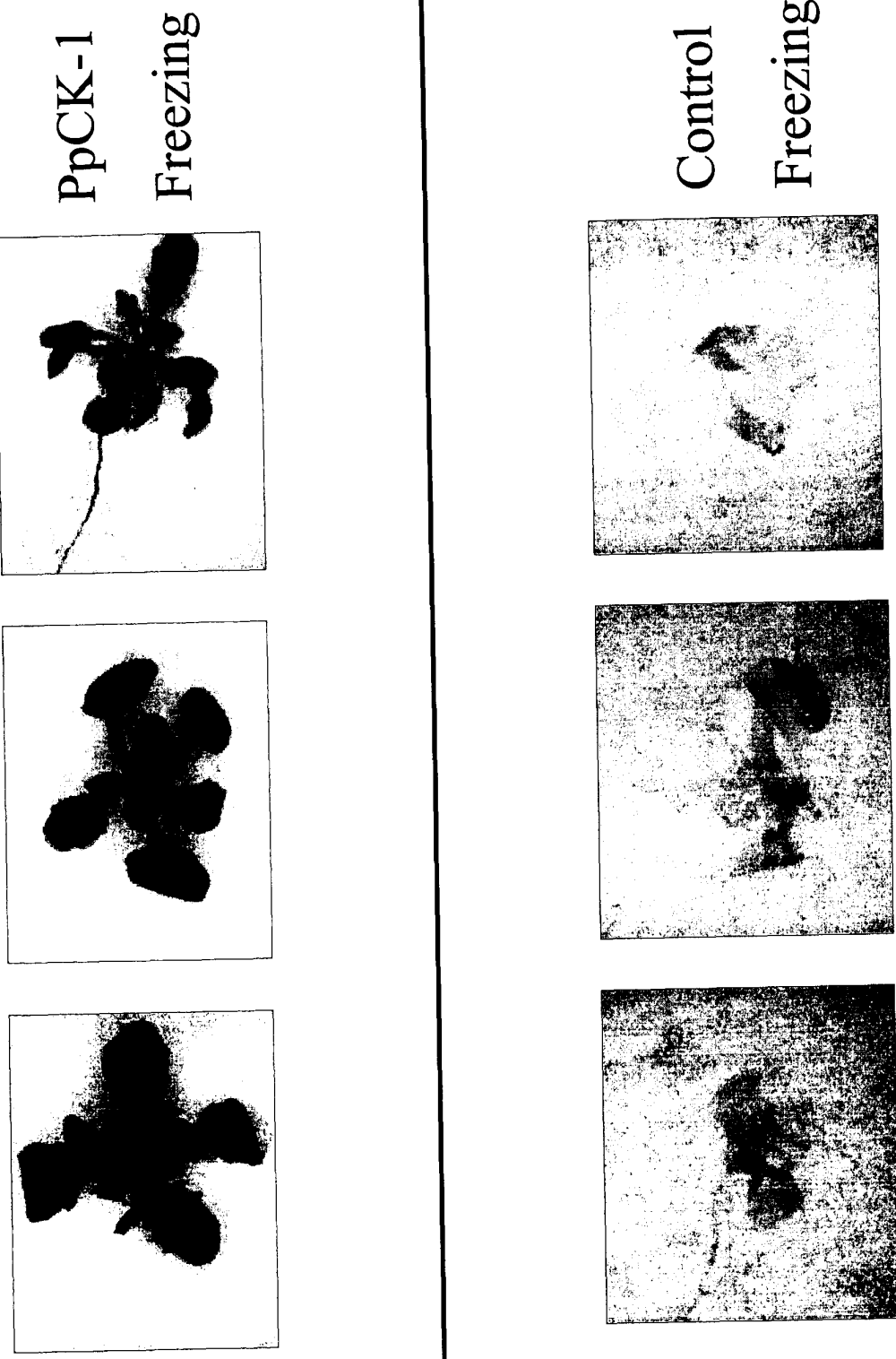


Figure 12

Figure 12

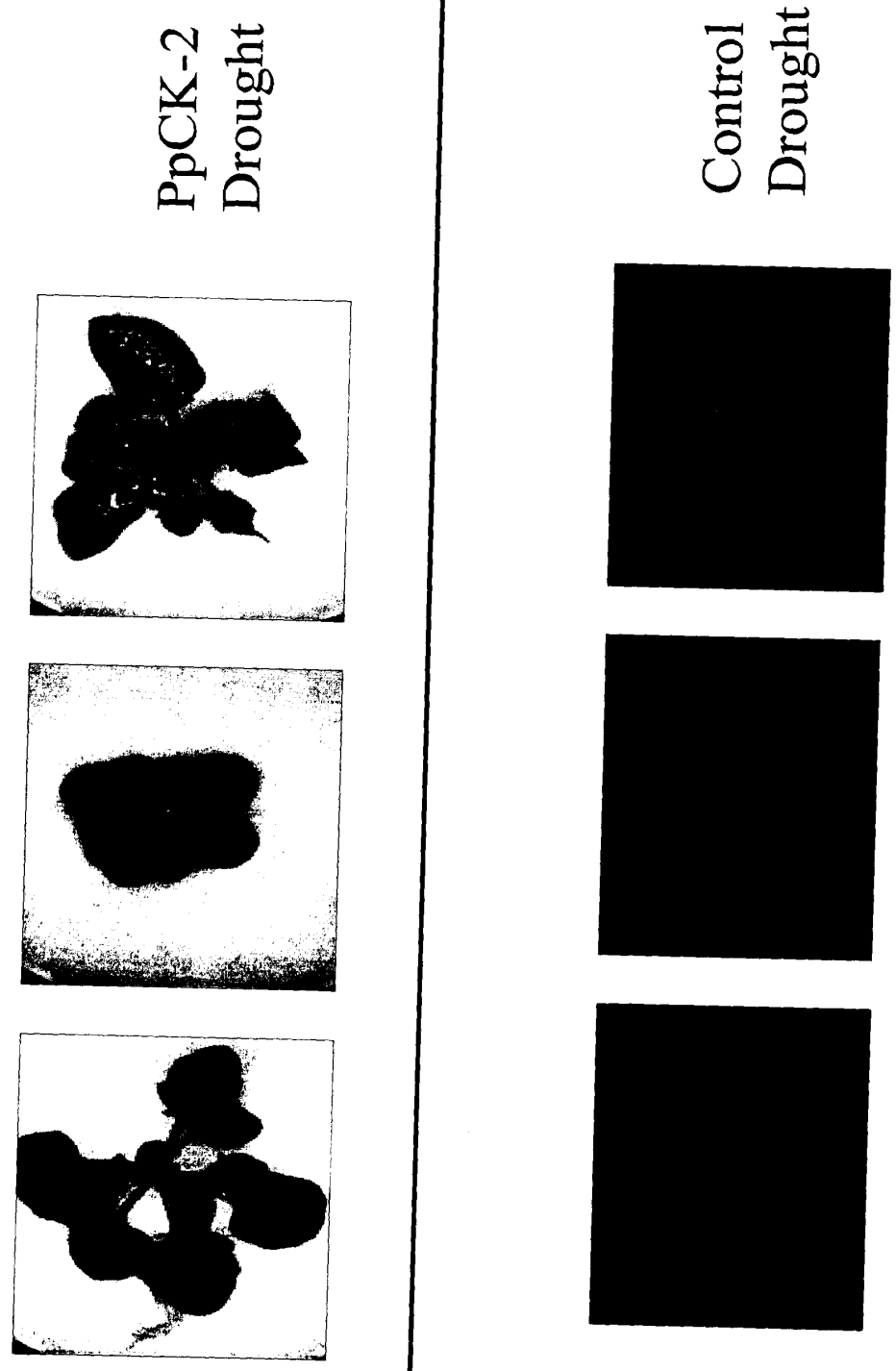


Figure 13

Figure 13

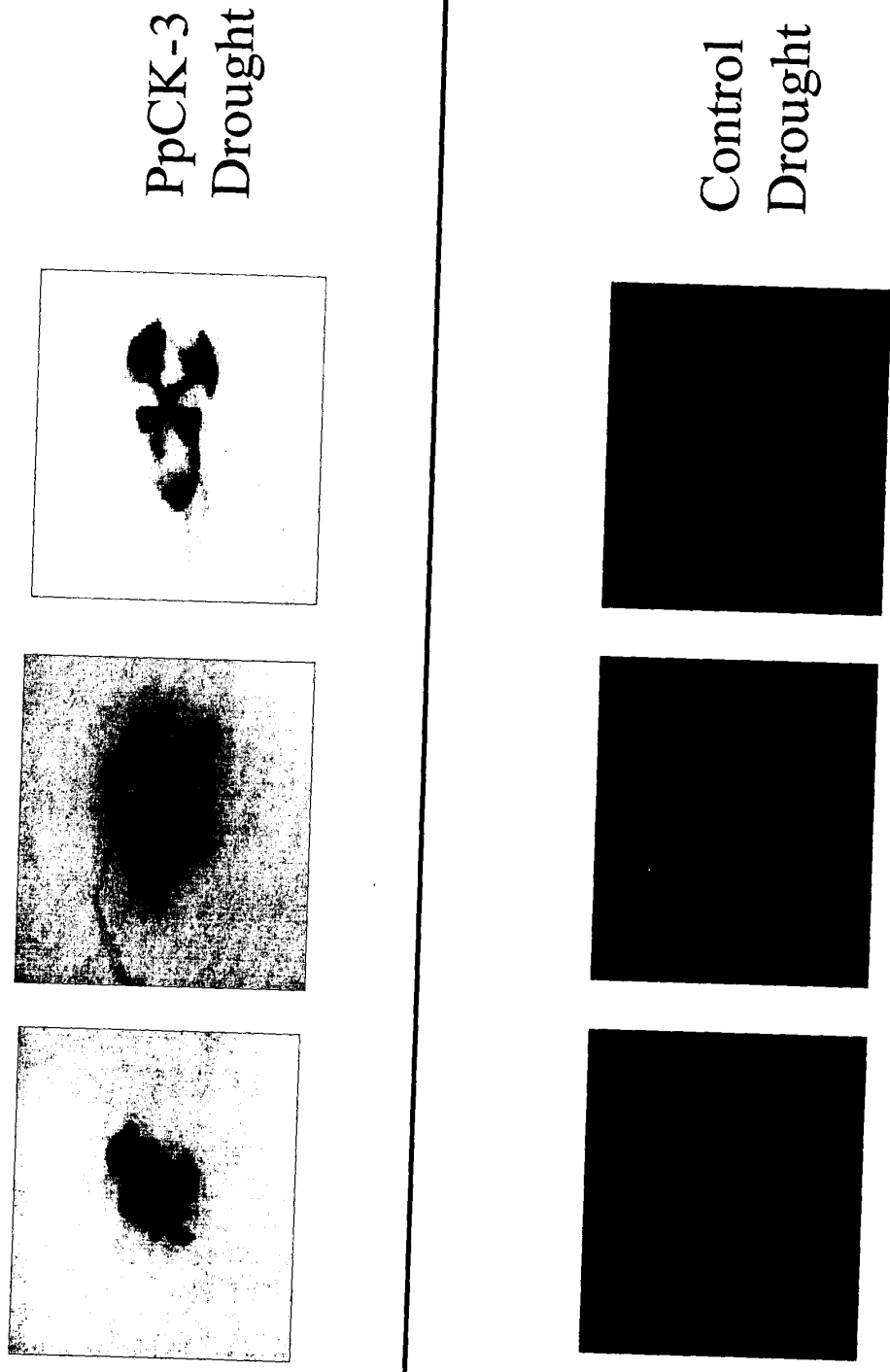
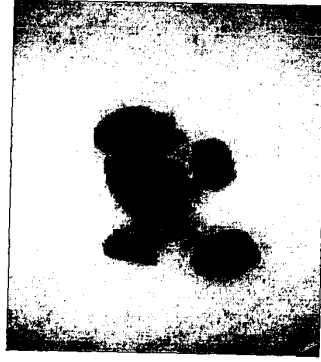


Figure 14



PpMPK-2
Drought

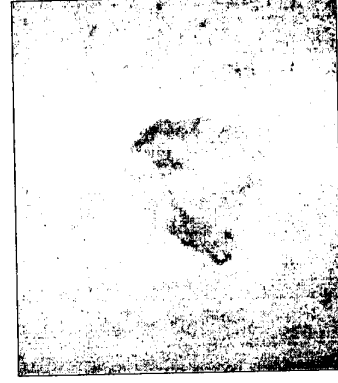


Control
Drought

Figure 15



PpMPK-2
Freezing



Control
Freezing

Figure 16



PpMPK-3
Drought

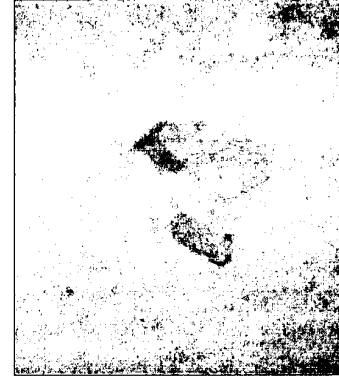
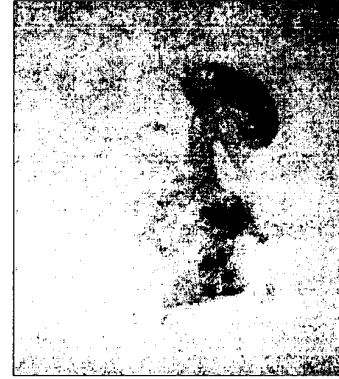


Control
Drought

Figure 17



PpMPK-3
Freezing



Control
Freezing

Figure 18

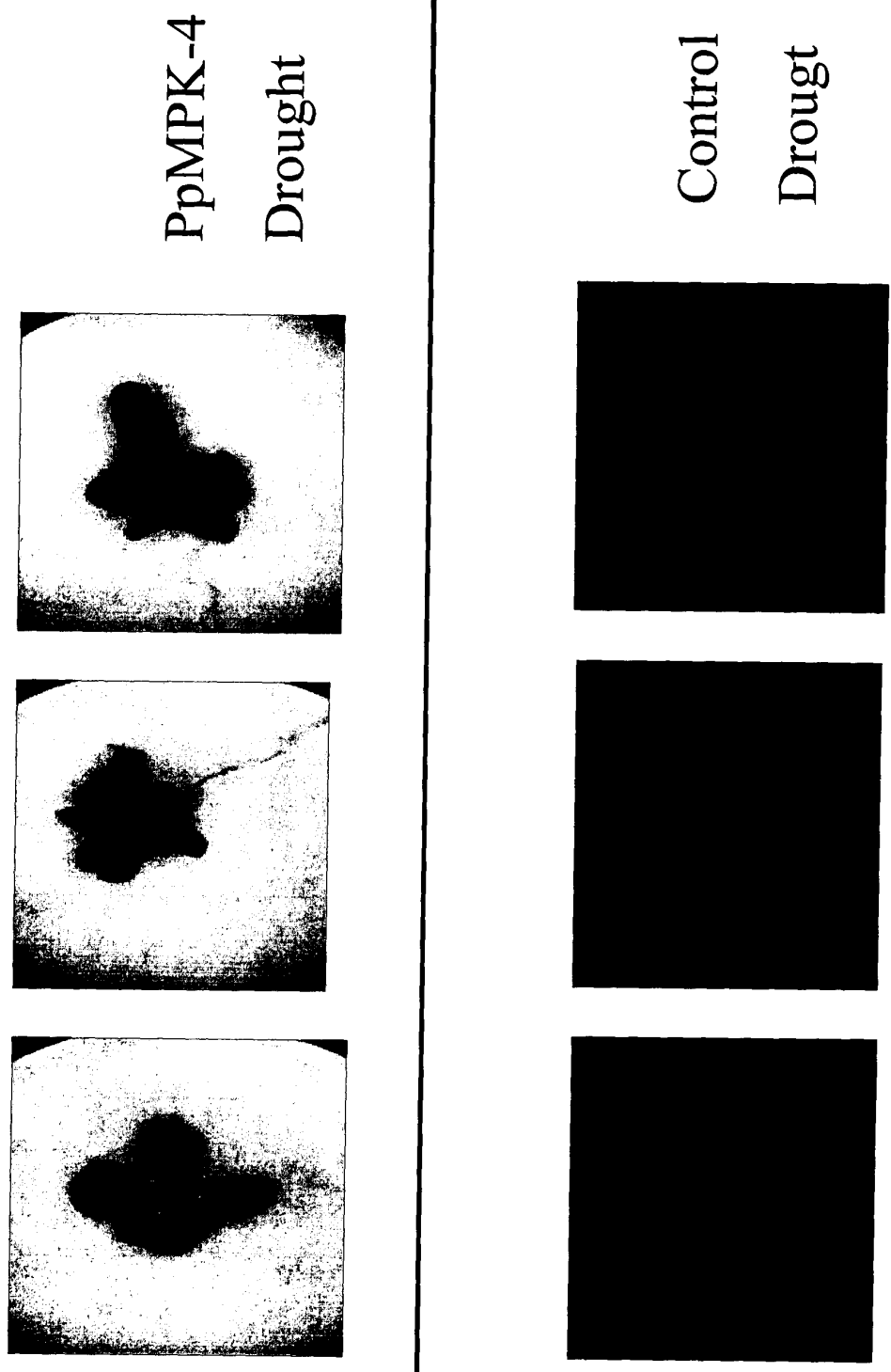


Figure 19

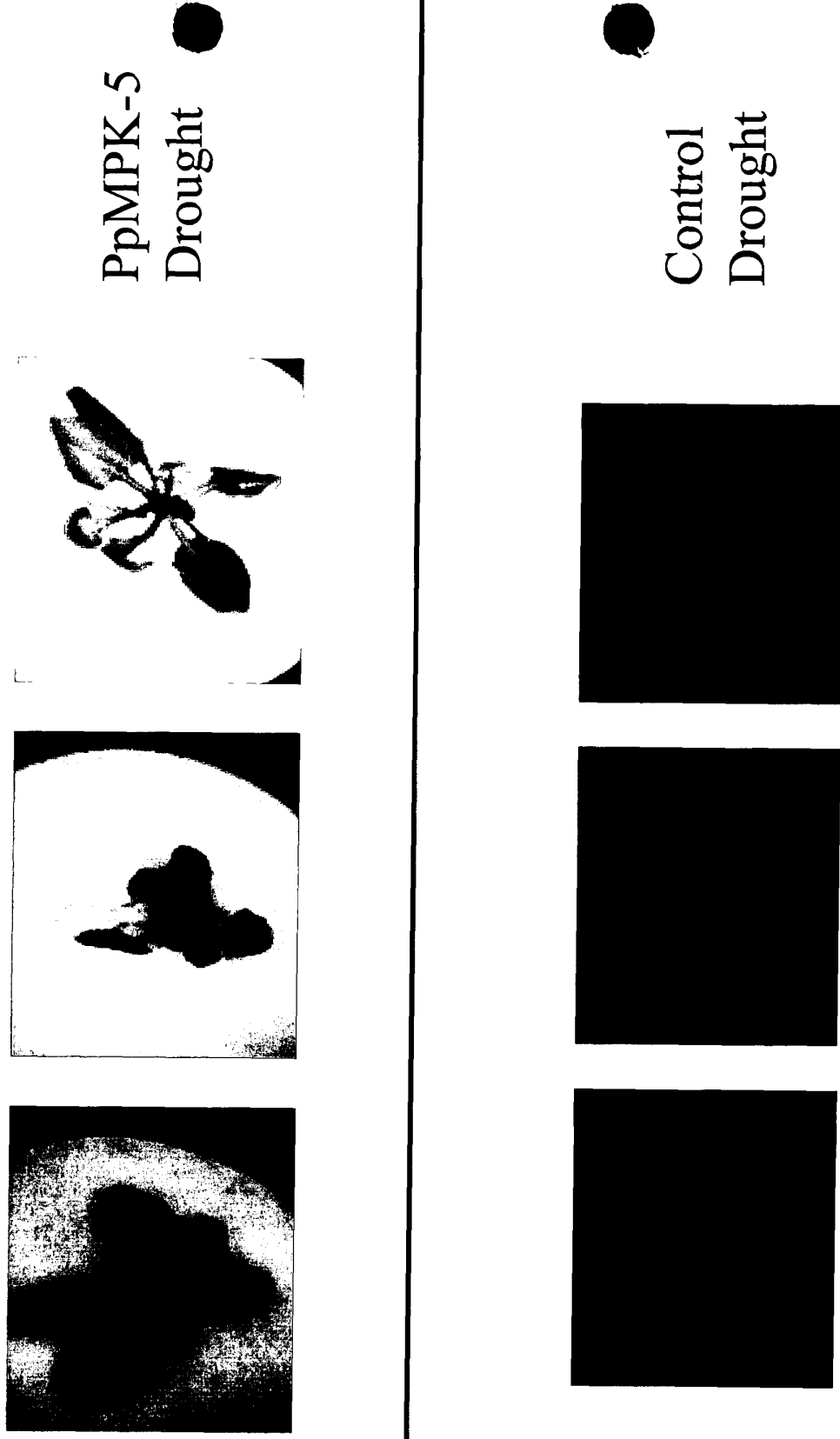


Figure 20

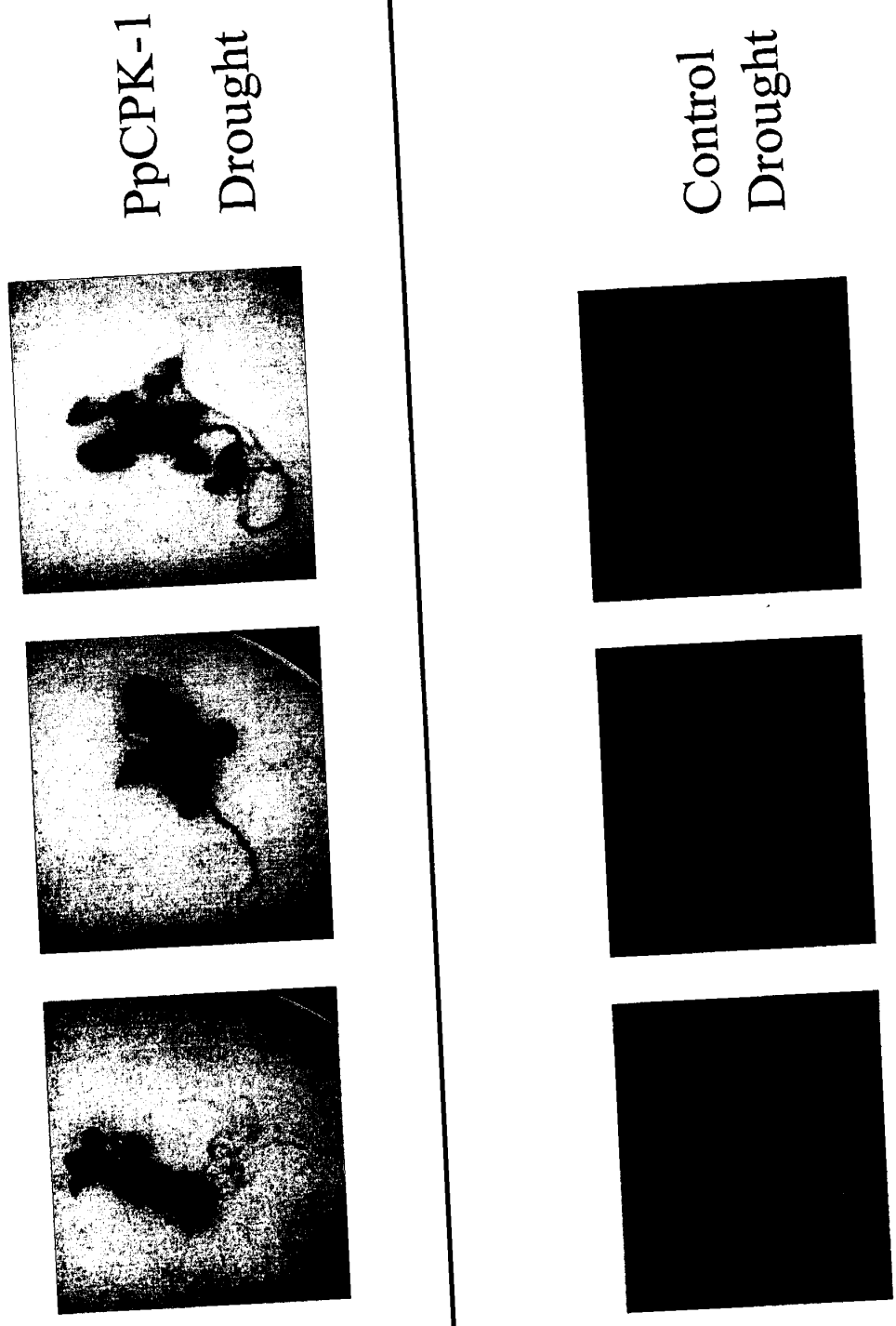


Figure 21



PpCPK-2
Drought



Control
Drought

